

Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 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 <sup>2</sup>
No. Examinees Taking <sup>1</sup>	2	13
No. Examinees Passing	2	12
Percent Examinees Passing	100%	92%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	75.0	63.5	0.8
Means and Methods	3	33.3	56.4	0.8
Soil Mechanics	6	50.0	57.7	1.3
Structural Mechanics	6	66.7	51.3	1.2
Hydraulics and Hydrology	7	78.6	79.1	0.9
Geometrics	3	100.0	82.1	0.6
Materials	6	91.7	66.7	1.0
Site Development	5	90.0	80.0	0.9
Analysis and Design	4	75.0	76.9	1.1
Hydraulics Closed Conduit	5	60.0	52.3	0.7
Hydraulics Open Channel	5	60.0	66.2	1.0
Hydrology	7	85.7	74.7	1.6
Groundwater and Wells	3	100.0	79.5	0.5
Wastewater Collection and Treatment	6	33.3	50.0	1.0
Water Quality	3	100.0	94.9	0.4
Drinking Water Distribution and Treatment	6	83.3	85.9	0.9
Engineering Economics Analysis	1	50.0	69.2	0.5

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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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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	1	30
No. Examinees Passing	1	21
Percent Examinees Passing	100%	70%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Water: Principles	4	100.0	55.8	1.1
Water: Wastewater	8	100.0	69.2	1.1
Water: Stormwater	2	0.0	51.7	0.8
Water: Potable Water	8	75.0	66.7	1.6
Water: Water Resources	2	50.0	48.3	0.7
Air: Principles	8	87.5	52.9	1.8
Air: Pollution Control	8	75.0	72.1	1.5
Solid and Hazardous Waste: Principles	6	66.7	75.6	0.9
Solid and Hazardous Waste: Municipal and Industrial Solid Waste	4	75.0	67.5	0.9
Solid and Hazardous Waste: Hazardous; Medical; and Radioactive Waste	2	50.0	40.0	0.7
Site Assessment and Remediation: Principles	6	66.7	68.9	1.1
Site Assessment and Remediation: Applications	8	87.5	75.8	1.5
Environmental Health and Safety: Principles	4	100.0	72.5	1.0
Environmental Health and Safety: Applications	4	50.0	46.7	1.1
Associated Engineering Principles: Principles	2	50.0	65.0	0.5
Associated Engineering Principles: Applications	4	100.0	65.8	1.0

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 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 <sup>2</sup>
No. Examinees Taking <sup>1</sup>	6	536
No. Examinees Passing	4	305
Percent Examinees Passing	67%	57%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	58.3	66.6	0.8
Means and Methods	3	66.7	57.5	0.8
Soil Mechanics	6	55.6	58.1	1.2
Structural Mechanics	6	69.4	58.7	1.5
Hydraulics and Hydrology	7	64.3	53.1	1.6
Geometrics	3	94.4	79.1	0.7
Materials	6	77.8	71.7	1.2
Site Development	5	83.3	83.4	0.9
Earthwork Construction and Layout	6	55.6	59.7	1.1
Estimating Quantities and Costs	6	72.2	66.6	1.1
Construction Operations and Methods	7	52.4	59.7	1.4
Scheduling	5	83.3	75.3	1.0
Material Quality Control and Production	6	58.3	63.2	1.3
Temporary Structures	7	47.6	49.4	1.5
Construction Health and Safety	3	77.8	76.1	0.8

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	2	344
No. Examinees Passing	1	222
Percent Examinees Passing	50%	65%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	62.5	61.0	0.8
Means and Methods	3	83.3	59.3	0.8
Soil Mechanics	6	66.7	68.6	1.2
Structural Mechanics	6	50.0	62.1	1.4
Hydraulics and Hydrology	7	64.3	58.6	1.5
Geometrics	3	83.3	82.0	0.6
Materials	6	66.7	78.4	1.0
Site Development	5	70.0	86.5	0.8
Site Characterization	5	50.0	53.3	1.1
Soil Mechanics; Laboratory Testing; and Analysis	5	70.0	61.3	1.2
Field Materials Testing; Methods; and Safety	3	100.0	89.4	0.6
Earthquake Engineering and Dynamic Loads	2	25.0	50.4	0.6
Earth Structures	4	50.0	69.8	1.0
Groundwater and Seepage	3	33.3	41.8	0.9
Problematic Soil and Rock Conditions	3	66.7	53.6	0.8
Earth Retaining Structures (ASD or LRFD)	5	20.0	41.9	1.2
Shallow Foundations (ASD or LRFD)	5	40.0	64.8	1.1
Deep Foundations (ASD or LRFD)	5	40.0	59.8	1.1

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	3	1,012
No. Examinees Passing	3	602
Percent Examinees Passing	100%	59%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	83.3	63.1	0.9
Means and Methods	3	100.0	72.2	0.7
Soil Mechanics	6	61.1	63.0	1.2
Structural Mechanics	6	94.4	78.7	1.2
Hydraulics and Hydrology	7	52.4	60.4	1.6
Geometrics	3	100.0	80.9	0.7
Materials	6	88.9	74.7	1.1
Site Development	5	93.3	84.1	1.0
Analysis of Structures: Loads and load applications	4	75.0	54.8	1.0
Analysis of Structures: Forces and load effects	10	73.3	59.6	1.9
Design and Details of Structures: Materials and material properties	5	73.3	67.9	1.3
Design and Details of Structures: Component design and detailing	15	77.8	58.0	2.7
Codes and Construction: Codes; standards; and guidance documents	4	58.3	51.0	1.0
Codes and Construction: Temporary structures and other topics	2	100.0	61.9	0.8

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	8	1,199
No. Examinees Passing	6	754
Percent Examinees Passing	75%	63%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	68.8	61.9	0.8
Means and Methods	3	62.5	56.1	0.8
Soil Mechanics	6	62.5	57.0	1.2
Structural Mechanics	6	56.3	51.8	1.5
Hydraulics and Hydrology	7	67.9	56.1	1.5
Geometrics	3	91.7	87.4	0.6
Materials	6	77.1	69.3	1.2
Site Development	5	90.0	81.3	1.0
Traffic Engineering (Capacity Analysis and Transportation Planning)	11	67.0	59.8	1.8
Horizontal Design	4	40.6	45.6	1.1
Vertical Design	4	65.6	60.4	1.0
Intersection Geometry	4	46.9	44.2	1.1
Roadside and Cross Section Design	4	56.3	58.2	1.0
Signal Design	3	41.7	48.5	0.9
Traffic Control Design	3	70.8	73.1	0.8
Geotechnical and Pavement	4	81.3	69.6	0.9
Drainage	2	37.5	30.8	0.7
Alternatives Analysis	1	75.0	57.7	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 <sup>2</sup>
No. Examinees Taking <sup>1</sup>	2	1,033
No. Examinees Passing	1	658
Percent Examinees Passing	50%	64%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	50.0	59.7	0.9
Means and Methods	3	83.3	54.7	0.8
Soil Mechanics	6	41.7	58.2	1.2
Structural Mechanics	6	50.0	53.1	1.5
Hydraulics and Hydrology	7	64.3	66.1	1.4
Geometrics	3	83.3	81.6	0.7
Materials	6	66.7	67.2	1.2
Site Development	5	80.0	81.5	1.0
Analysis and Design	4	50.0	66.7	0.9
Hydraulics Closed Conduit	5	60.0	48.2	1.1
Hydraulics Open Channel	5	50.0	53.6	1.1
Hydrology	7	64.3	60.6	1.4
Groundwater and Wells	3	100.0	63.5	0.9
Wastewater Collection and Treatment	6	58.3	46.7	1.3
Water Quality	3	83.3	73.9	0.8
Drinking Water Distribution and Treatment	6	100.0	61.7	1.5
Engineering Economics Analysis	1	0.0	55.9	0.5

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	2	54
No. Examinees Passing	1	31
Percent Examinees Passing	50%	57%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Water: Principles	4	50.0	56.9	1.0
Water: Wastewater	8	50.0	64.1	1.6
Water: Stormwater	2	75.0	55.6	0.7
Water: Potable Water	8	56.3	65.3	1.6
Water: Water Resources	2	100.0	49.1	0.7
Air: Principles	8	56.3	54.6	1.4
Air: Pollution Control	8	56.3	62.7	1.4
Solid and Hazardous Waste: Principles	6	41.7	67.3	1.2
Solid and Hazardous Waste: Municipal and Industrial Solid Waste	4	50.0	55.6	1.0
Solid and Hazardous Waste: Hazardous; Medical; and Radioactive Waste	2	0.0	49.1	0.7
Site Assessment and Remediation: Principles	6	75.0	67.6	1.2
Site Assessment and Remediation: Applications	8	93.8	73.4	1.8
Environmental Health and Safety: Principles	4	87.5	73.6	0.8
Environmental Health and Safety: Applications	4	25.0	34.7	0.9
Associated Engineering Principles: Principles	2	50.0	69.4	0.7
Associated Engineering Principles: Applications	4	62.5	61.6	1.2

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	7	676
No. Examinees Passing	3	366
Percent Examinees Passing	43%	54%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
General Power Engineering: Measurement and Instrumentation	4	46.4	56.5	1.0
General Power Engineering: Applications	8	66.1	65.1	1.6
General Power Engineering: Codes and Standards	12	64.3	64.0	1.9
Circuits: Analysis	9	63.5	61.9	1.7
Circuits: Devices and Power Electronic Circuits	7	51.0	59.4	1.4
Rotating Machines and Electric Power Devices: Induction and Synchronous Machines	8	58.9	64.0	1.5
Rotating Machines and Electric Power Devices: Electric Power Devices	8	51.8	57.3	1.5
Transmission and Distribution (High; Medium; and Low Voltage): Power System Analysis	11	63.6	56.3	2.1
Transmission and Distribution (High; Medium; and Low Voltage): Protection	13	56.0	60.4	2.4

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	1	24
No. Examinees Passing	0	12
Percent Examinees Passing	0%	50%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
General Power Engineering: Measurement and Instrumentation	4	50.0	57.3	1.1
General Power Engineering: Applications	8	37.5	65.6	1.6
General Power Engineering: Codes and Standards	12	25.0	59.4	2.2
Circuits: Analysis	9	33.3	59.3	2.0
Circuits: Devices and Power Electronic Circuits	7	42.9	61.9	1.5
Rotating Machines and Electric Power Devices: Induction and Synchronous Machines	8	50.0	61.5	1.6
Rotating Machines and Electric Power Devices: Electric Power Devices	8	37.5	62.0	1.5
Transmission and Distribution (High; Medium; and Low Voltage): Power System Analysis	11	63.6	56.8	1.9
Transmission and Distribution (High; Medium; and Low Voltage): Protection	13	23.1	59.0	2.5

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	5	440
No. Examinees Passing	4	298
Percent Examinees Passing	80%	68%
		ABET

	Number of Exam Questions	Institution Average Percent Correct	Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Principles: Basic Engineering Practice	4	95.0	77.9	0.8
Principles: Thermodynamics	4	75.0	66.1	1.0
Principles: Psychrometrics (e.g.; sea level; 5000-ft elevation)	8	95.0	72.6	1.6
Principles: Heat Transfer	7	77.1	71.5	1.3
Principles: Fluid Mechanics	4	45.0	47.3	1.0
Principles: Energy and Mass Balances	5	60.0	69.7	1.2
Applications: Heating and Cooling Loads	8	87.5	77.7	1.4
Applications: Equipment and Components	18	77.8	73.2	2.6
Applications: Systems and Components	18	58.9	61.9	2.8
Applications: Supportive Knowledge	4	60.0	62.5	1.1

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Name of Institution:		University of Kentucky, Lexington		
Major:	Mechanical	PE Examination:	Mechanical: Machine Design and Materials	

		Institution	ABET Comparator <sup>2</sup>	
No. Examinees Taking <sup>1</sup>		3	401	
No. Examinees Passing		2	297	
Percent Examinees Passing		67%	74%	
	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Principles: Basic Engineering Practice	9	81.5	80.1	1.5
Principles: Basic Engineering Practice Principles: Engineering Science and Mechanics	<mark>9</mark> 10	<mark>81.5</mark> 80.0	<mark>80.1</mark> 73.1	<mark>1.5</mark> 2.1
Principles: Engineering Science and Mechanics	10	80.0	73.1	2.1
Principles: Engineering Science and Mechanics Principles: Material Properties	10 8	80.0 79.2	73.1 67.8	2.1 1.7
Principles: Engineering Science and Mechanics Principles: Material Properties Principles: Strength of Materials	10 8 10	80.0 79.2 60.0	73.1 67.8 68.0	2.1 1.7 2.0
Principles: Engineering Science and Mechanics Principles: Material Properties Principles: Strength of Materials Principles: Vibration	10 8 10 3	80.0 79.2 60.0 55.6	73.1 67.8 68.0 54.0	2.1 1.7 2.0 0.8

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	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 <sup>3</sup>
Project Planning	4	50.0	50.0	0.0
Means and Methods	3	33.3	33.3	0.0
Soil Mechanics	6	66.7	66.7	0.0
Structural Mechanics	6	33.3	33.3	0.0
Hydraulics and Hydrology	7	71.4	71.4	0.0
Geometrics	3	100.0	100.0	0.0
Materials	6	33.3	33.3	0.0
Site Development	5	80.0	80.0	0.0
Traffic Engineering (Capacity Analysis and Transportation Planning)	11	72.7	72.7	0.0
Horizontal Design	4	25.0	25.0	0.0
Vertical Design	4	75.0	75.0	0.0
Intersection Geometry	4	25.0	25.0	0.0
Roadside and Cross Section Design	4	0.0	0.0	0.0
Signal Design	3	33.3	33.3	0.0
Traffic Control Design	3	66.7	66.7	0.0
Geotechnical and Pavement	4	0.0	0.0	0.0
Drainage	2	50.0	50.0	0.0
Alternatives Analysis	1	100.0	100.0	0.0

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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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2018 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 <sup>2</sup>
No. Examinees Taking <sup>1</sup>	6	47
No. Examinees Passing	3	30
Percent Examinees Passing	50%	64%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Exploration: Exploration Methods and Techniques	3	27.8	51.1	0.9
Exploration: Site Geologic and Geotechnical Conditions	3	66.7	62.4	0.8
Exploration: Resources and Reserves	4	58.3	52.7	1.1
Mine Planning and Operations: Mining Methods and Layouts	8	62.5	67.6	1.1
Mine Planning and Operations: Mine Equipment; Facilities; and Systems	13	66.7	66.8	2.1
Mine Planning and Operations: Ground Control	5	66.7	66.0	1.3
Mine Planning and Operations: Mine Planning and Systems	5	60.0	60.0	1.1
Mineral Processing: Laboratory and Pilot Testing and Results	4	75.0	54.3	1.0
Mineral Processing: Process Flow Sheets	9	63.0	60.8	1.8
Mineral Processing: Plant Equipment; Facilities; and Systems	7	61.9	63.5	1.1
Mineral Processing: Plants and Facilities	4	45.8	63.3	1.1
Environment and Reclamation: Site; Mining; and Process Environment	4	66.7	62.2	0.8
Environment and Reclamation: Exploration; Mining; and Processing Impacts	5	53.3	55.7	1.3
Environment and Reclamation: Environmental and Reclamation Plan	3	66.7	80.9	0.7
Environment and Reclamation: Reclamation and Postclosure	3	38.9	51.8	0.8

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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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