

Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 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>	1	12
No. Examinees Passing	0	10
Percent Examinees Passing	0%	83%

	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	83.3	0.7
Means and Methods	3	66.7	55.6	0.6
Soil Mechanics	6	33.3	58.3	1.4
Structural Mechanics	6	16.7	38.9	1.1
Hydraulics and Hydrology	7	57.1	83.3	0.9
Geometrics	3	100.0	72.2	0.7
Materials	6	50.0	66.7	1.3
Site Development	5	60.0	58.3	1.4
Analysis and Design	4	75.0	83.3	0.8
Hydraulics Closed Conduit	5	0.0	80.0	1.4
Hydraulics Open Channel	5	60.0	73.3	1.0
Hydrology	7	85.7	85.7	0.7
Groundwater and Wells	3	66.7	75.0	0.6
Wastewater Collection and Treatment	6	83.3	62.5	1.1
Water Quality	3	33.3	58.3	0.9
Drinking Water Distribution and Treatment	6	33.3	56.9	1.4
Engineering Economics Analysis	1	100.0	66.7	0.5

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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 Jan 01—Jun 30, 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	31
No. Examinees Passing	1	21
Percent Examinees Passing	100%	68%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Water: Principles	4	75.0	68.5	0.8
Water: Wastewater	8	62.5	50.8	1.6
Water: Stormwater	2	100.0	58.1	0.7
Water: Potable Water	8	50.0	62.1	1.3
Water: Water Resources	2	0.0	30.6	0.6
Air: Principles	8	87.5	72.6	1.2
Air: Pollution Control	8	100.0	75.0	1.3
Solid and Hazardous Waste: Principles	6	83.3	65.6	1.0
Solid and Hazardous Waste: Municipal and Industrial Solid Waste	4	100.0	73.4	0.9
Solid and Hazardous Waste: Hazardous; Medical; and Radioactive Waste	2	50.0	41.9	0.4
Site Assessment and Remediation: Principles	5	100.0	60.0	1.1
Site Assessment and Remediation: Applications	9	88.9	76.3	1.4
Environmental Health and Safety: Principles	4	100.0	82.3	0.7
Environmental Health and Safety: Applications	4	50.0	54.8	1.0
Associated Engineering Principles: Principles	2	50.0	53.2	0.4
Associated Engineering Principles: Applications	4	100.0	80.6	0.8

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 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>	7	682
No. Examinees Passing	3	405
Percent Examinees Passing	43%	59%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	82.1	83.4	0.8
Means and Methods	3	52.4	62.2	0.8
Soil Mechanics	6	61.9	59.6	1.3
Structural Mechanics	6	38.1	47.6	1.3
Hydraulics and Hydrology	7	71.4	70.5	1.4
Geometrics	3	66.7	76.2	0.7
Materials	6	81.0	76.8	1.3
Site Development	5	62.9	62.3	1.2
Earthwork Construction and Layout	6	78.6	72.8	1.3
Estimating Quantities and Costs	6	61.9	67.1	1.3
Construction Operations and Methods	7	51.0	57.1	1.6
Scheduling	5	80.0	77.9	1.0
Material Quality Control and Production	6	69.0	70.5	1.2
Temporary Structures	7	36.7	46.1	1.5
Construction Health and Safety	3	47.6	54.7	0.9

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 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>	7	330
No. Examinees Passing	6	201
Percent Examinees Passing	86%	61%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	92.9	78.8	0.8
Means and Methods	3	61.9	56.8	0.8
Soil Mechanics	6	85.7	76.5	1.3
Structural Mechanics	6	66.7	55.3	1.2
Hydraulics and Hydrology	7	83.7	74.6	1.4
Geometrics	3	81.0	75.1	0.7
Materials	6	85.7	78.2	1.2
Site Development	5	74.3	60.4	1.1
Site Characterization	5	57.1	56.5	1.1
Soil Mechanics; Laboratory Testing; and Analysis	5	71.4	71.4	1.2
Field Materials Testing; Methods; and Safety	3	81.0	68.7	0.8
Earthquake Engineering and Dynamic Loads	2	64.3	61.1	0.7
Earth Structures	4	89.3	80.8	0.8
Groundwater and Seepage	3	85.7	74.9	0.8
Problematic Soil and Rock Conditions	3	71.4	57.3	0.7
Earth Retaining Structures (ASD or LRFD)	5	51.4	60.2	1.2
Shallow Foundations (ASD or LRFD)	5	82.9	69.1	1.2
Deep Foundations (ASD or LRFD)	5	62.9	63.2	1.2

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 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	1,209
No. Examinees Passing	3	733
Percent Examinees Passing	100%	61%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	91.7	83.0	0.8
Means and Methods	3	77.8	67.7	0.8
Soil Mechanics	6	66.7	66.8	1.3
Structural Mechanics	6	88.9	70.5	1.2
Hydraulics and Hydrology	7	90.5	75.0	1.3
Geometrics	3	100.0	79.5	0.6
Materials	6	94.4	77.1	1.1
Site Development	5	53.3	56.6	1.1
Analysis of Structures: Loads and load applications	4	58.3	62.1	1.0
Analysis of Structures: Forces and load effects	10	83.3	67.6	1.8
Design and Details of Structures: Materials and material properties	5	73.3	57.9	1.2
Design and Details of Structures: Component design and detailing	15	64.4	56.4	2.8
Codes and Construction: Codes; standards; and guidance documents	4	83.3	59.3	1.1
Codes and Construction: Temporary structures and other topics	2	66.7	54.7	0.7

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>	
No. Examinees Taking <sup>1</sup>	14	1,469	
No. Examinees Passing	9	972	
Percent Examinees Passing	64%	66%	
		ABET	4057

	Number of Exam Questions	Institution Average Percent Correct	ABE I Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	71.4	76.8	0.9
Means and Methods	3	50.0	55.4	0.8
Soil Mechanics	6	57.1	54.8	1.3
Structural Mechanics	6	31.0	46.5	1.3
Hydraulics and Hydrology	7	60.2	71.8	1.4
Geometrics	3	88.1	81.2	0.6
Materials	6	65.5	73.1	1.2
Site Development	5	51.4	59.8	1.1
Traffic Engineering (Capacity Analysis and Transportation Planning)	11	57.8	59.6	1.7
Horizontal Design	4	67.9	63.4	0.9
Vertical Design	4	53.6	66.5	1.0
Intersection Geometry	4	64.3	64.8	1.0
Roadside and Cross Section Design	4	57.1	60.5	1.0
Signal Design	3	57.1	50.9	0.9
Traffic Control Design	3	78.6	78.4	0.8
Geotechnical and Pavement	4	51.8	59.9	1.1
Drainage	2	71.4	81.4	0.6
Alternatives Analysis	1	35.7	51.1	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 <sup>2</sup>
No. Examinees Taking <sup>1</sup>	6	1,169
No. Examinees Passing	4	836
Percent Examinees Passing	67%	72%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	91.7	77.3	0.9
Means and Methods	3	38.9	56.1	0.7
Soil Mechanics	6	47.2	56.4	1.4
Structural Mechanics	6	25.0	47.0	1.3
Hydraulics and Hydrology	7	78.6	77.6	1.3
Geometrics	3	77.8	77.5	0.6
Materials	6	77.8	72.5	1.2
Site Development	5	43.3	57.7	1.1
Analysis and Design	4	70.8	73.6	1.0
Hydraulics Closed Conduit	5	70.0	70.1	0.9
Hydraulics Open Channel	5	66.7	73.9	1.0
Hydrology	7	88.1	82.1	1.2
Groundwater and Wells	3	61.1	61.0	0.9
Wastewater Collection and Treatment	6	41.7	61.0	1.4
Water Quality	3	61.1	61.5	0.9
Drinking Water Distribution and Treatment	6	41.7	52.1	1.5
Engineering Economics Analysis	1	50.0	56.5	0.5

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	1	49
No. Examinees Passing	0	35
Percent Examinees Passing	0%	71%

	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	72.4	1.0
Water: Wastewater	8	12.5	53.1	1.8
Water: Stormwater	2	0.0	62.2	0.7
Water: Potable Water	8	50.0	66.3	1.5
Water: Water Resources	2	50.0	39.8	0.7
Air: Principles	8	25.0	64.8	1.6
Air: Pollution Control	8	25.0	71.9	1.7
Solid and Hazardous Waste: Principles	6	33.3	66.3	1.0
Solid and Hazardous Waste: Municipal and Industrial Solid Waste	4	25.0	74.0	0.9
Solid and Hazardous Waste: Hazardous; Medical; and Radioactive Waste	2	0.0	51.0	0.6
Site Assessment and Remediation: Principles	5	40.0	69.4	1.0
Site Assessment and Remediation: Applications	9	55.6	77.6	1.6
Environmental Health and Safety: Principles	4	50.0	82.1	0.8
Environmental Health and Safety: Applications	4	25.0	59.2	1.2
Associated Engineering Principles: Principles	2	0.0	60.2	0.6
Associated Engineering Principles: Applications	4	50.0	78.6	0.8

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	7	719
No. Examinees Passing	3	404
Percent Examinees Passing	43%	56%

	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	57.1	70.5	0.9
General Power Engineering: Applications	8	69.6	64.3	1.6
General Power Engineering: Codes and Standards	12	58.3	56.4	2.0
Circuits: Analysis	9	63.5	67.3	2.0
Circuits: Devices and Power Electronic Circuits	7	63.3	65.6	1.3
Rotating Machines and Electric Power Devices: Induction and Synchronous Machines	8	46.4	65.3	1.6
Rotating Machines and Electric Power Devices: Electric Power Devices	8	51.8	47.9	1.6
Transmission and Distribution (High; Medium; and Low Voltage): Power System Analysis	11	67.5	70.0	1.9
Transmission and Distribution (High; Medium; and Low Voltage): Protection	13	62.6	62.6	2.4

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	4	448
No. Examinees Passing	4	328
Percent Examinees Passing	100%	73%
		ABET

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Principles: Basic Engineering Practice	4	68.8	76.3	1.0
Principles: Thermodynamics	4	81.3	70.5	1.0
Principles: Psychrometrics (e.g.; sea level; 5000-ft elevation)	8	90.6	76.5	1.6
Principles: Heat Transfer	7	82.1	78.8	1.1
Principles: Fluid Mechanics	3	91.7	74.0	0.8
Principles: Energy and Mass Balances	6	83.3	83.0	1.1
Applications: Heating and Cooling Loads	8	75.0	80.5	1.5
Applications: Equipment and Components	18	61.1	60.0	2.8
Applications: Systems and Components	18	91.7	76.8	2.7
Applications: Supportive Knowledge	4	81.3	62.2	0.9

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

No. Examinees Taking <sup>1</sup>		Institution 2	ABET Comparator <sup>2</sup> 376	
No. Examinees Passing		0	284	
Percent Examinees Passing		0%	76%	
	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	44.4	68.0	1.7
Principles: Engineering Science and Mechanics	10	35.0	59.8	2.2
Principles: Material Properties	8	62.5	67.5	1.4
Principles: Strength of Materials	10	50.0	67.0	2.0
Principles: Vibration	3	83.3	71.5	0.8
Applications: Mechanical Components	18	50.0	65.0	3.4

12

10

70.8

65.0

74.2

71.5

2.1

2.0

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### TERMS AND CONDITIONS OF DATA USE

Applications: Joints and Fasteners

Applications: Supportive Knowledge

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	2	395
No. Examinees Passing	1	278
Percent Examinees Passing	50%	70%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Principles: Basic Engineering Practice	6	83.3	82.1	1.1
Principles: Fluid Mechanics	6	75.0	81.2	1.0
Principles: Heat Transfer Principles (e.g.; convection; conduction; radiation)	6	66.7	75.7	1.3
Principles: Mass Balance Principles (e.g.; evaporation; dehumidification; mixing)	4	37.5	65.5	1.1
Principles: Thermodynamics	6	58.3	62.5	1.4
Principles: Supportive Knowledge	4	62.5	76.6	0.9
Hydraulic and Fluid Applications: Hydraulic and Fluid Equipment	15	46.7	65.7	2.6
Hydraulic and Fluid Applications: Distribution Systems (e.g.; pipe flow)	9	50.0	66.0	1.7
Energy and Power System Applications: Energy and Power Equipment	8	50.0	73.0	1.7
Energy and Power System Applications: Cooling and Heating (e.g.; capacity; loads; cycles)	6	50.0	65.3	1.6
Energy and Power System Applications: Energy Recovery (e.g.; waste heat; storage)	5	70.0	74.6	1.3
Energy and Power System Applications: Combined Cycles (e.g.; components; efficiency)	5	70.0	59.7	1.2

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 2018 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator <sup>2</sup>
No. Examinees Taking <sup>1</sup>	1	4
No. Examinees Passing	1	2
Percent Examinees Passing	100%	50%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation <sup>3</sup>
Project Planning	4	100.0	87.5	0.5
Means and Methods	3	66.7	58.3	1.1
Soil Mechanics	6	83.3	66.7	1.6
Structural Mechanics	6	50.0	45.8	0.4
Hydraulics and Hydrology	7	85.7	85.7	0.7
Geometrics	3	66.7	58.3	0.4
Materials	6	83.3	79.2	1.1
Site Development	5	100.0	65.0	1.8
Earthwork Construction and Layout	6	83.3	83.3	0.7
Estimating Quantities and Costs	6	100.0	75.0	1.1
Construction Operations and Methods	7	85.7	64.3	2.3
Scheduling	5	80.0	80.0	0.7
Material Quality Control and Production	6	100.0	66.7	1.9
Temporary Structures	7	42.9	46.4	1.8
Construction Health and Safety	3	100.0	66.7	1.0
Scheduling Material Quality Control and Production Temporary Structures	5 6 7	80.0 100.0 42.9	80.0 66.7 46.4	0.7 1.9 1.8

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.

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