Sample Subject Matter Reports

Produced for ABET-accredited institutions after each administration of the NCEES Fundamentals of Engineering (FE) exam

NCEES

advancing licensure for engineers and surveyors

March 2016

NCEES
advancing licensure for engineers and surveyors

Examination: Fundamentals of Engineering (FE)
Report title: Subject Matter Report by Major and Examination
Exams administered: Jul 01—Nov 30, 20XX
Examinees included: First-Time Examinees from EAC/ABET-Accredited Engineering Programs
Graduation Date: Examinees Testing within 12 months of Graduation Date

Name of Institution:	**EXAMPLE**		
Major:	**Civil**	FE Examination:	**Civil**

	Institution	ABET Comparator[2]
No. Examinees Taking [1]	31	2,499
No. Examinees Passing	26	1,760
Percent Examinees Passing	84%	70%

	Number of Exam Questions	Institution Average Performance Index[3]	ABET Comparator Average Performance Index	ABET Comparator Standard Deviation	Ratio Score[4]	Scaled Score[4]
					Uncertainty Range for Scaled Score[4]	± 0.18
Mathematics	7	9.8	9.8	2.7	1.00	0.00
Probability and Statistics	4	10.4	10.1	3.5	1.03	0.09
Computational Tools	4	10.2	9.9	3.7	1.03	0.08
Ethics and Professional Practice	4	12.3	11.1	3.8	1.11	0.32
Engineering Economics	4	10.7	10.1	3.6	1.06	0.17
Statics	7	10.7	9.5	2.8	1.13	0.43
Dynamics	4	10.9	10.3	3.6	1.06	0.17
Mechanics of Materials	7	9.7	9.7	2.5	1.00	0.00
Materials	4	8.7	9.2	3.1	0.95	-0.16
Fluid Mechanics	4	10.5	10.9	3.4	0.96	-0.12
Hydraulics and Hydrologic Systems	8	9.7	9.4	2.2	1.03	0.14
Structural Analysis	6	9.7	8.9	2.5	1.09	0.32
Structural Design	6	8.4	8.9	2.6	0.94	-0.19
Geotechnical Engineering	9	9.5	9.4	2.1	1.01	0.05
Transportation Engineering	8	9.2	9.0	2.2	1.02	0.09
Environmental Engineering	6	8.9	8.8	2.7	1.01	0.04
Construction	4	11.5	9.5	3.7	1.21	0.54
Surveying	4	8.4	8.1	3.6	1.04	0.08

1. **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. Performance index is based on a 0–15 scale.
4. These scores are made available for assessment purposes. See the NCEES publication entitled Using the FE as an Outcomes Assessment Tool at http://ncees.org/licensure/educator-resources/.

NCEES
advancing licensure for engineers and surveyors

Examination: Fundamentals of Engineering (FE)
Report title: Subject Matter Report by Major and Examination
Exams administered: Jul 01—Nov 30, 20XX
Examinees included: First-Time Examinees from EAC/ABET-Accredited Engineering Programs
Graduation Date: Examinees Testing within 12 months of Graduation Date

Name of Institution: **EXAMPLE**	
Major: **Electrical**	FE Examination: **Electrical and Computer**

	Institution	ABET Comparator[2]
No. Examinees Taking [1]	14	595
No. Examinees Passing	13	462
Percent Examinees Passing	93%	78%

	Number of Exam Questions	Institution Average Performance Index[3]	ABET Comparator Average Performance Index	ABET Comparator Standard Deviation	Ratio Score [4]	Scaled Score [4]
Mathematics	11	10.6	10.1	2.4	1.05	0.21
Probability and Statistics	4	9.8	10.3	3.2	0.95	-0.16
Ethics and Professional Practice	3	13.4	11.8	4.0	1.14	0.40
Engineering Economics	3	11.6	9.9	4.1	1.17	0.41
Properties of Electrical Materials	4	10.8	11.0	2.9	0.98	-0.07
Engineering Sciences	6	12.5	11.6	3.3	1.08	0.27
Circuit Analysis	10	10.1	9.9	2.6	1.02	0.08
Linear Systems	5	9.9	9.4	3.0	1.05	0.17
Signal Processing	5	10.2	9.7	3.0	1.05	0.17
Electronics	7	10.8	9.7	2.3	1.11	0.48
Power	8	9.5	9.6	2.1	0.99	-0.05
Electromagnetics	5	11.6	10.0	3.1	1.16	0.52
Control Systems	6	9.4	9.2	2.5	1.02	0.08
Communications	5	10.0	9.0	2.8	1.11	0.36
Computer Networks	3	9.7	9.5	4.3	1.02	0.05
Digital Systems	7	10.7	9.2	2.7	1.16	0.56
Computer Systems	4	10.1	8.9	3.7	1.13	0.32
Software Development	4	11.9	10.5	4.4	1.13	0.32

Uncertainty Range for Scaled Score [4] ± 0.27

1. **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. Performance index is based on a 0–15 scale.
4. These scores are made available for assessment purposes. See the NCEES publication entitled Using the FE as an Outcomes Assessment Tool at http://ncees.org/licensure/educator-resources/.

NCEES
advancing licensure for engineers and surveyors

Examination: Fundamentals of Engineering (FE)
Report title: Subject Matter Report by Major and Examination
Exams administered: Jul 01—Nov 30, 20XX
Examinees included: First-Time Examinees from EAC/ABET-Accredited Engineering Programs
Graduation Date: Examinees Testing within 12 months of Graduation Date

Name of Institution:	**EXAMPLE**		
Major:	**Mechanical**	FE Examination:	**Mechanical**

	Institution	ABET Comparator[2]
No. Examinees Taking [1]	3	1,707
No. Examinees Passing	2	1,452
Percent Examinees Passing	67%	85%

	Number of Exam Questions	Institution Average Performance Index[3]	ABET Comparator Average Performance Index	ABET Comparator Standard Deviation	Ratio Score[4]	Scaled Score[4]
					Uncertainty Range for Scaled Score[4]	± 0.58
Mathematics	6	10.3	10.5	3.0	0.98	-0.07
Probability and Statistics	4	8.7	10.5	3.2	0.83	-0.56
Computational Tools	3	8.0	11.0	4.2	0.73	-0.71
Ethics and Professional Practice	3	15.0	11.8	3.9	1.27	0.82
Engineering Economics	3	8.2	10.2	4.2	0.80	-0.48
Electricity and Magnetism	3	13.2	11.0	3.8	1.20	0.58
Statics	8	10.2	10.1	2.6	1.01	0.04
Dynamics, Kinematics, and Vibrations	9	10.5	10.0	2.3	1.05	0.22
Mechanics of Materials	8	11.3	9.9	2.1	1.14	0.67
Material Properties and Processing	8	9.8	9.9	2.1	0.99	-0.05
Fluid Mechanics	9	10.5	10.3	2.2	1.02	0.09
Thermodynamics	13	9.5	9.6	1.5	0.99	-0.07
Heat Transfer	9	10.8	9.9	2.2	1.09	0.41
Measurements, Instrumentation, and Controls	5	8.6	9.5	3.1	0.91	-0.29
Mechanical Design and Analysis	9	9.4	9.1	2.4	1.03	0.13

1. **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. Performance index is based on a 0–15 scale.
4. These scores are made available for assessment purposes. See the NCEES publication entitled Using the FE as an Outcomes Assessment Tool at http://ncees.org/licensure/educator-resources/.

NCEES
advancing licensure for engineers and surveyors

Examination: Fundamentals of Engineering (FE)
Report title: Subject Matter Report by Major and Examination
Exams administered: Jul 01—Nov 30, 20XX
Examinees included: First-Time Examinees from EAC/ABET-Accredited Engineering Programs
Graduation Date: Examinees Testing within 12 months of Graduation Date

Name of Institution:	**EXAMPLE**		
Major:	**Petroleum**	FE Examination:	**Other Disciplines**

	Institution	ABET Comparator[2]
No. Examinees Taking [1]	7	81
No. Examinees Passing	6	54
Percent Examinees Passing	86%	67%

	Number of Exam Questions	Institution Average Performance Index[3]	ABET Comparator Average Performance Index	ABET Comparator Standard Deviation	Ratio Score [4]	Scaled Score [4]
Mathematics and Advanced Engineering Mathematics	12	8.8	9.0	1.8	0.98	-0.11
Probability and Statistics	6	9.3	9.2	1.9	1.01	0.05
Chemistry	7	9.9	9.6	2.3	1.03	0.13
Instrumentation and Data Acquisition	4	7.0	9.0	3.4	0.78	-0.59
Ethics and Professional Practice	3	13.1	11.4	3.7	1.15	0.46
Safety, Health, and Environment	4	11.6	11.2	3.4	1.04	0.12
Engineering Economics	7	11.5	9.8	2.8	1.17	0.61
Statics	8	9.1	8.8	2.5	1.03	0.12
Dynamics	7	10.3	9.5	2.3	1.08	0.35
Strength of Materials	8	9.4	8.7	2.0	1.08	0.35
Materials Science	6	8.4	8.9	2.3	0.94	-0.22
Fluid Mechanics and Dynamics of Liquids	8	9.4	9.0	2.3	1.04	0.17
Fluid Mechanics and Dynamics of Gases	4	9.8	8.6	3.1	1.14	0.39
Electricity, Power, and Magnetism	7	9.3	8.5	2.2	1.09	0.36
Heat, Mass, and Energy Transfer	9	8.9	8.7	2.1	1.02	0.10

Uncertainty Range for Scaled Score [4] ± 0.38

1. **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. Performance index is based on a 0–15 scale.
4. These scores are made available for assessment purposes. See the NCEES publication entitled Using the FE as an Outcomes Assessment Tool at http://ncees.org/licensure/educator-resources/.

NCEES
advancing licensure for engineers and surveyors

Examination: Fundamentals of Engineering (FE)
Report title: Subject Matter Report by Major and Examination
Exams administered: Jul 01—Nov 30, 20XX
Examinees included: First-Time Examinees from EAC/ABET-Accredited Engineering Programs
Graduation Date: Examinees testing more than 12 months after graduation date

Name of Institution:	**EXAMPLE**		
Major:	**Construction**	FE Examination:	**Civil**

	Institution	ABET Comparator[2]
No. Examinees Taking [1]	2	3
No. Examinees Passing	1	2
Percent Examinees Passing	50%	67%

	Number of Exam Questions	Institution Average Performance Index[3]	ABET Comparator Average Performance Index	ABET Comparator Standard Deviation	Ratio Score[4]	Scaled Score[4]
						Uncertainty Range for Scaled Score[4] ± 0.71
Mathematics	7	8.4	8.0	0.6	1.05	0.67
Probability and Statistics	4	12.6	11.3	2.7	1.12	0.48
Computational Tools	4	9.2	8.2	1.4	1.12	0.71
Ethics and Professional Practice	4	15.0	15.0	0.0	1.00	—
Engineering Economics	4	10.5	9.6	3.9	1.09	0.23
Statics	7	11.5	11.1	2.9	1.04	0.14
Dynamics	4	10.3	11.8	4.5	0.87	-0.33
Mechanics of Materials	7	9.1	9.2	0.4	0.99	-0.25
Materials	4	9.0	9.4	1.0	0.96	-0.40
Fluid Mechanics	4	12.4	13.3	2.5	0.93	-0.36
Hydraulics and Hydrologic Systems	8	11.6	9.9	3.6	1.17	0.47
Structural Analysis	6	7.9	8.3	0.7	0.95	-0.57
Structural Design	6	8.8	8.1	1.8	1.09	0.39
Geotechnical Engineering	9	8.9	7.9	1.5	1.13	0.67
Transportation Engineering	8	9.5	9.0	1.5	1.06	0.33
Environmental Engineering	6	8.8	8.8	1.5	1.00	0.00
Construction	4	11.5	12.6	3.3	0.91	-0.33
Surveying	4	9.1	9.2	0.6	0.99	-0.17

1. **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. Performance index is based on a 0–15 scale.
4. These scores are made available for assessment purposes. See the NCEES publication entitled Using the FE as an Outcomes Assessment Tool at http://ncees.org/licensure/educator-resources/.

NCEES
advancing licensure for engineers and surveyors

Examination: Principles and Practice of Engineering (PE)
Report title: Subject Matter Report by Major and Examination
Exams administered: Jul 01—Nov 30, 20XX
Examinees included: First-Time Examinees from EAC/ABET-Accredited Engineering Programs

Name of Institution:	**EXAMPLE**		
Major:	**Chemical**	PE Examination:	**Chemical**

	Institution	ABET Comparator [2]
No. Examinees Taking [1]	4	176
No. Examinees Passing	2	132
Percent Examinees Passing	50%	75%

	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	8	53.1	61.5	1.9
Mass Energy Balances and Thermodynamics: Energy Balances and Thermodynamics	10	52.5	63.0	1.9
Heat Transfer: Mechanisms	7	42.9	64.7	1.3
Heat Transfer: Applications	6	50.0	62.4	1.4
Kinetics: Reaction Parameters	5	50.0	56.9	1.2
Kinetics: Reactors	4	62.5	57.8	1.1
Fluids: Mechanical-Energy Balance	10	65.0	67.0	2.0
Fluids: Flow and Pressure Measurement Techniques	3	50.0	69.2	0.9
Mass Transfer: Phase Equilibria	4	62.5	67.5	1.1
Mass Transfer: Continuous Vapor-Liquid Contactors	6	41.7	49.4	1.4
Mass Transfer: Miscellaneous Mass Transfer Processes	1	100.0	87.9	0.3
Plant Design and Operation: Economic Considerations	1	75.0	77.0	0.4
Plant Design and Operation: Design	8	59.4	65.7	1.7
Plant Design and Operation: Operation	3	58.3	62.6	0.8
Plant Design and Operation: Safety; Health; and Environment	4	68.8	69.8	0.9

1. **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.