Earth Systems 3209
June 2014 Public Exam Outcome Report

Unit 1 – Introduction
Unit 2 – Historical Geology
Unit 3 – Earth Materials
Unit 4 – Forces Within Earth
Unit 5 – Earth Resources

PART I – Total Value: 75%

Item	Cognitive Level	Curriculum Guide Page	Unit	Outcome Topic
1.	L1	28	1	Minor Branches of Earth Science
2.	L2	30	1	Solar System's Origin – Solar Nebular Hypothesis
3.	L1	32	1	Layers/Structure of Earth
4.	L2	32	1	Layers of Earth – Characteristics
5.	L2	32	1	Temperature and Density Trends Through Earth
6.	L2	42	2	Relative Dating Techniques
7.	L2	42	2	Unconformities
8.	L1	40 and 42	2	Relative Time Versus Absolute Time
9.	L3	46	2	Absolute Dating Techniques
10.	L1	48	2	Radioactive Dating Terminology
11.	L2	48	2	Sources of Error in Estimating Radiometric Ages
12.	L1	52	2	Definition of a Fossil
13.	L2	52	2	Methods of Fossilization
14.	L1	52	2	Trace Fossil – Example
15.	L1	56	2	Divisions of Geological Time
16.	L1	56 and 58	2	Geological Time Frames and Life Forms
17.	L3	58 and 60	2	Sequence of Evolution of Life Forms
18.	L2	60	2	Extinct Species and Geological Boundaries
19.	L1	66	3	Chemical Elements
20.	L1	68	3	Definition of a Mineral
21.	L1	68	3	Major Mineral Groups
22.	L3	70 and Core Lab 3 Part II	3	Specific Gravity Calculations
23.	L1	68 and Core Lab 3	3	Mineral Identification
24.	L2	78 and 112	3	Rock Types and Tectonic Plate Boundaries
25.	L2	70 and Core Lab 3	3	Mineral Identification and Properties
26.	L1	70 and Core Lab 3	3	Mineral Identification and Properties
27.	L1	76	3	Igneous Rocks – Mineral Content
28.	L2	74	3	The Rock Cycle – Rock Types and Processes Involved
29.	L1	74 and 86	3	Sedimentary Rock Formation
30.	L2	76	3	Igneous Rocks – Textures and Composition
31.	L3	76 and 78	3	Igneous Rock Types and Mineral Composition – Bowen's Reaction Series
32.	L1	78	3	Igneous Rocks – Textures
33.	L1	78	3	Igneous Rocks - Textures – Cooling Rates
34.	L2	72	3	Minerals: Compositions and Atomic Arrangements
35.	L2	86	3	Sediment Horizontal Sorting
36.	L2	86	3	Sediment Sorting
37.	L1	86 and 88	3	Classifying Clastic Sedimentary Rocks – Particle Shape
38.	L1	86	3	Classifying Clastic Sedimentary Rocks
39.	L1	88	3	Chemical Sedimentary Rocks
40.	L1	90 and 92	3	Biochemical Sedimentary Rocks – Environments
41.	L1	88	3	Clastic Sedimentary Rocks - Environments
42.	L3	94	3	Metamorphic Rocks – Textures and Compositions
43.	L1	94	3	Metamorphic Rocks – Agents
44.	L2	94	3	Grades of Increasing Metamorphism
45.	L1	114 and 106	4	Contributing Scientists to Plate Tectonics Theory
46.	L2	120	4	Sedimentary Rocks - Deformation
47.	L1	120	4	Types of Deformation
48.	L3	124	4	Faults and Forces
49.	L1	124	4	Types of Faults
50.	L2	126	4	Plate Boundaries and Earthquake Types
51.	L2	112	4	Plate Boundary Collision Types
52.	L3	124	4	Fold Types
53.	L1	104/STSE 4	4	Supercontinents
54.	L2	126	4	Examples of Plate Boundary Types
55.	L2	124	4	Fault Types

56.	L1	128	4	Characteristic of Earthquake Waves
57.	L2	128	4	Earthquake Scales
58.	L1	136	4	Formation of a Lava Plateau
59.	L1	132 and Core Lab 5	4	Locating an Earthquake's Epicenter
60.	L1	116 and STSE 4	4	Geological Zones of Newfoundland
61.	L3	136	4	Volcano Types and Characteristics
62.	L1	134	4	Volcano Types – Global Examples
63.	L1	138	4	Effects of Volcanism
64.	L1	140	4	Careers in Earth Sciences
65.	L2	146	5	Economic Mineral Deposit Types
66.	L1	146	5	Economic Minerals
67.	L2	146	5	Economic Minerals and Contributing Factors
68.	L2	154	5	Petroleum Rock Types
69.	L3	164	5	Refining Petroleum – Fractional Distillation Chamber
70.	L1	154	5	Petroleum Terminology
71.	L1	148 and 152	5	Exploration Techniques
72.	L3	156	5	Components of Petroleum Traps
73.	L1	156	5	Evolution of Kerogen
74.	L1	162	5	Extraction Techniques – Petroleum
75.	L1	164	5	Techniques for Refining Petroleum

PART II – Value: 25%

Item	Curriculum Guide Page	Unit	Value	Outcome Topic
76.	34	1	2%	Event Affecting Earth's Spheres
77.(a)	48	2	2%	Radiometric Dating Calculations
77.(b)	52	2	3%	Fossilization Methods
78.(a)	Core Lab 3	3	2%	Comparing and Contrasting Sedimentary and Metamorphic Rock Examples
78.(b)	86	3	3%	Sedimentary Rock Identification and Processes of Formation
78.(c)	94 and 96	3	2%	Metamorphism Types and Rock Types
79.(a)	128 and Core Lab 5	4	2%	Earthquakes: p-waves, s-waves, Distance to Epicenter and Properties of Waves
79.(b)	104-108 and 114	4	2%	Theory of Continental Drift versus Theory of Plate Tectonics
79.(c)	114	4	2%	Evidence Supporting Theory of Plate Tectonics
80.(a)	146	5	3%	Formation of Mineral Deposits
80.(b)	156 and 160	5	2%	Placement of Wells into Petroleum Traps and Factors Affecting Production