Shri Shivaji Education Society Amravati's Science College Congress Nagar, Nagpur

Congress Nagar, Nagpur Department of Geology Certificate course in Basic Petroleum Geology

Session 2019-2020

The Session started from 6th of February 2020, 55 students enrolled for this certificate course. Students successfully completed the theory and practical.

The class on Basic Petroleum Geology was conducted to provide fundamental knowledge about the geological principles and processes relevant to the exploration and production of petroleum. This report outlines the key topics covered, learning outcomes, and insights gained during the course.

Action Taken

The Certificate course in Basic Petroleum Geology provides participants with fundamental knowledge and skills essential for understanding the geological aspects of petroleum exploration and production. Participants gain insights into sedimentary basins, reservoir characterization, petroleum systems, and the geological processes governing hydrocarbon accumulation. Through lectures, practical exercises, and field trips where applicable, students learn to interpret geological maps, analyze rock samples, and evaluate the potential of petroleum reserves. By the end of the course, participants are equipped with a solid foundation in petroleum geology, enabling them to contribute effectively in the energy industry or pursue further studies in this specialized field.

Course Coordinatos

To, The Principal SSES Amt's Science College, Congress Nagar, Nagpur-12

Subject: For permission to conduct the add on courses in the Geology department

Respected Sir,

This is to request you that, the teachers of our Geology department have prepared the syllabus and modules of the 30 hours certificate courses for the session 2019-2020.

The details of the course module, syllabus and time table is submitted here with.

Hence please permit to run the add on courses and oblige me.

Thanking you

Date:- 21/05/2019

Yours sincetely Department Amravati's S. S. E. S. Amravati's Science College, Nagpur.

Permitted

Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Geology

Add on Certificate Course (2019-2020)

Certificate Course in Basic Petroleum Geology

Notice

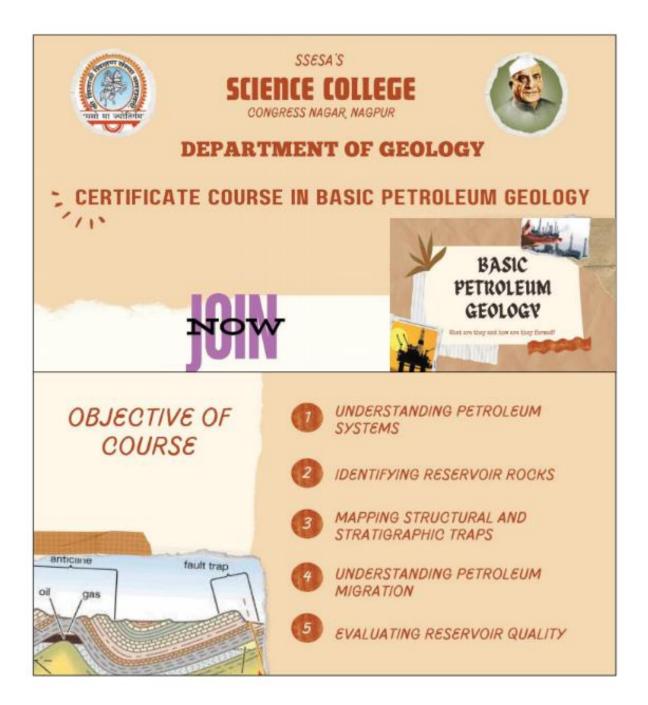
All the B.Sc. I, II, III year students of Geology Department are hereby informed that the Geology department commencing a certificate course on Basic Petroleum Geology from 6th of February 2020. For this course registration will start from 27th of January 2020 to 4th of February 2020. Interested students contact to course coordinator for registration.

Note: Registration is free

Course Coordinator: Ms. P. B. Zamarkar

Contact No. 7028898026

Amerchal Course Coordinator



SSESA's Science College Congress Nagar, Nagpur

Certificate course in 'Basic Petroleum Geology'

Content

Unit I: Earth Structure (Lithosphere, Mantle, Core), Determination of Earth structure and Composition (earthquake waves on the Earth, Specific gravity of the earth, Earth's magnetic field, Earth temperature gradient), Plate Tectonics (Continental drift theory, Crust of the Earth, Causes of continental motions, Continental margins, Continental margins and petroleum)

Unit II: Geology time (Geological time scale), Stratigraphy, Paleontology, History of continents, Minerals and Rocks (Physical properties of minerals, Igneous-Sedimentary-Metamorphic rocks), Rock Cycle, Rock Cycle and Petroleum, Weathering erosion and deposition.

Unit III: Marine environment and deposition (Environment, Erosion, Deposition), Structural Geology (stress, strain, fault, fold, strike, dip), Petroleum Trap (Hydrocarbon traps, Structural traps, stratigraphic traps, Combination traps).

Unit IV: Rocks, Reservoirs, Recovery Techniques (Rock sampling, Porosity and permeability)

Practicals: Megascopic identification of minerals and rocks, Structural models.

Reference Books: Basic of Petrolium Geology by Peter K. Link, Elements of Petroleum geology by Richard C. Selley, Rutleys Element of Mineralogy.

Objective of Course

- Understanding Petroleum Systems: Learn about the processes involved in the formation, migration, accumulation, and preservation of hydrocarbons in the Earth's subsurface.
- Identifying Reservoir Rocks: Identify and characterize sedimentary rocks that have the potential to host significant quantities of hydrocarbons, such as sandstones and carbonates.
- Mapping Structural and Stratigraphic Traps: Develop skills in interpreting seismic data and geological maps to locate potential traps where hydrocarbons can accumulate, such as anticlines, fault traps, and stratigraphic traps.
- Understanding Petroleum Migration: Study the mechanisms and pathways through which hydrocarbons migrate from source rocks to reservoir rocks, including buoyancy-driven migration and fault-related migration.

• Evaluating Reservoir Quality: Assess the porosity, permeability, and fluid saturation of reservoir rocks to determine their suitability for hydrocarbon storage and production.

Course Outcome

1. Conceptual Understanding: Developed a solid understanding of the geological processes involved in the formation and accumulation of petroleum.

2. Identification of Petroleum Systems: Learned to identify key elements of petroleum systems including source rocks, reservoirs, traps, and seals.

3. Application of Geological Principles: Gained proficiency in applying geological principles to petroleum exploration and production scenarios.

4. Critical Thinking: Developed critical thinking skills through analysis of geological data and interpretation of subsurface structures and stratigraphy.

5. Integration of Multidisciplinary Knowledge: Recognized the interdisciplinary nature of petroleum geology and its integration with other fields such as geophysics, geochemistry, and engineering.

Duration of Course: Ten Weeks (30 hours)

The Structure of the syllabus and system of evaluation

Course		Total Marks		
		Theory	Practical	
Certificate Course in Basic Petroleum Geology	Theory paper in Basic Petroleum Geology: Theory examination will be of MCQ pattern having 40 questions with 2 marks each.	80	20	
	Practical paper in Basic Petroleum Geology: Practical Examination will be based on performance evaluation in the laboratory	100		

SSESA's Science College Congress Nagar, Nagpur

Certificate course in 'Basic Petroleum Geology'

Week wise teaching plan

Week	Hrs	Syllabus
Week 1	1	Earth Structure -Lithosphere, Mantle
	1	Earth Structure - Core
	1	Earth Structure on model
Week 2	1	Earth structure and Composition
	1	Earth's magnetic field, Earth temperature gradient
	1	Megascopic identification of minerals
Week 3	1	Continental drift theory
	1	Crust of the Earth, Causes of continental motions
	1	Megascopic identification of minerals
Week 4	1	Continental margins, Continental margins and petroleum
	1	Geological time scale
	1	Megascopic identification of minerals
Week 5	1	Stratigraphy,
	1	Paleontology
	1	Megascopic identification of minerals
Week 6	1	History of continents,
	1	Physical properties of minerals, Igneous-Sedimentary-Metamorphic rocks
	1	Megascopic identification of rocks
Week 7	1	Igneous-Sedimentary-Metamorphic rocks
	1	Cycle, Rock Cycle and Petroleum, Weathering erosion and deposition

	1	Megascopic identification of rocks
Week 8	1	Marine environment and deposition
	1	stress, strain, fault
	1	Megascopic identification of rocks
Week 9	1	fold, strike, dip
	1	Hydrocarbon traps, Structural traps,
	1	Megascopic identification of rocks
Week 10	1	stratigraphic traps, Combination traps).
	1	Porosity and permeability
	1	Megascopic identification of rocks

SSES Amt's Science College, Congress Nagar, Nagpur-12

Certificate course in Basic Petroleum Geology

Time Table

Day	Theory
Friday	PBZ (Th) 4:00 PM – 5:00 PM, ADF(Th) 5:00 – 6:00 PM
Saturday	PBZ/ ADF (P) 4:00 PM - 5:00 PM

PBZ- Miss P. B. Zamarkar

ADF- Miss A. D. Fuladi

Th- Theory

P-Practical

Shri Shivaji Education Society Amravati's Science College

Congress Nagar, Nagpur Department of Geology

Certificate course in Basic Petroleum Geology

Session 2019-2020

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Shri Shivaji Education Society Amravati's Science College, Congress Nagar, Nagpur Certificate Course in Basic Petroleum Geology 2019-2020

Notice

All the students of B.Sc. I,II,III enrolled for the certificate course in Basic Petroleum Geology are hereby informed that attain classes regularly from 6th of February 2020, Thursday. It is compulsory to all students to attend the classes and appear for examination.

Go through the time table for more detail about the theory and practical classes.

Almarlier Course Coordinator

Shri Shivaji Education Society Amravati's Science College, Congress Nagar, Nagpur **Certificate Course in Basic Petroleum Geology**

2019-2020

Notice

All the students of B.Sc. I, II, III enrolled for the certificate course in Basic Petroleum Geology are hereby informed that the final examination of certificate course in Basic petroleum Geology will be held on 4th April 2020 i.e. Monday. It is compulsory to all enrolled students to appear for examination.

The students are informed to note the date and time of the examination as given below-

Theory Examination: Date: 4 April 2020, Time: 11:00 AM- 12: PM

Practical Examination: Date: 4 April 2020 Time: 1:00 PM- 4:00 PM

Almercher Course Coordinator

Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Geology

Theory Certificate course in Basic Petroleum Geology

Session 2019-2020

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Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Geology

Practical Certificate course in Basic Petroleum Geology

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Session 2019-2020

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SSES Amt's SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR DEPARTMENT OF GEOLOGY Add on Certificate Course (2019-2020) SUBJECT: CERTIFICATE COURSE IN BASIC PETROLIUM GEOLOGY

Time: 1 hour]

[Marks: 80

Name of St	udent:	 	
Roll No			
Date:			
Class:			

- 1. Question: Which type of rock is typically formed from the compaction and cementation of mineral grains?
- o Igneous
- o Metamorphic
- o Sedimentary
- o Conglomerate
- 2. Question: What is the term for a naturally occurring, inorganic solid with a crystalline structure and a definite chemical composition?
- o Rock
- o Mineral
- o Ore
- o Sediment
- 3. Question: Which of the following is NOT a type of sedimentary rock?
- o Sandstone
- o Marble
- o Conglomerate
- o Limestone
- 4. Question: What is the term for the process by which rocks are physically or chemically broken down by water, wind, or other natural forces?
- \circ Lithification
- \circ Erosion
- \circ Precipitation
- Fossilization
- 0
- 5. Question: Which of the following is NOT a characteristic used to identify minerals?
- o Color
- o Taste
- o Hardness
- o Cleavage
- 6. Question: What is the primary organic component found in petroleum?
- o Oxygen
- o Nitrogen

- \circ Carbon
- o Hydrogen
- 7. Question: Which geological process is responsible for the formation of sedimentary rocks?
- \circ Erosion
- o Volcanism
- \circ Weathering
- o Sedimentation
- 8. Question: What is the term for a naturally occurring underground reservoir of hydrocarbons?
- o Aquifer
- o Geyser
- o Reservoir
- o Trap
- 9. Question: What is the primary source of organic material in petroleum source rocks?
- o Plants
- o Algae
- o Animals
- o Fungi
- 10. Question: Which type of rock is typically impermeable and acts as a seal for petroleum reservoirs?
- o Sandstone
- o Shale
- o Limestone
- o Conglomerate

11. Question: What is the term for the process by which petroleum migrates through porous rock?

- o Seepage
- o Diffusion
- \circ Migration
- Permeation

12. Question: Which geological structure is formed by the folding of rock layers?

- o Fault
- o Dome
- o Graben
- o Syncline

13. Question: What type of trap is formed by the bending of rock layers?

- Stratigraphic trap
- o Structural trap
- o Combination trap
- Salt dome trap
- 14. Question: Which method is commonly used to locate potential petroleum reservoirs beneath the Earth's surface?
- \circ Satellite imaging
- Well drilling
- o Seismic surveys

- o Ground-penetrating radar
- 15. Question: What is the primary technique used to measure porosity in reservoir rocks?
- Well logging
- Core analysis
- Geochemical analysis
- \circ Seismic interpretation

16. Question: Which of the following is NOT a type of petroleum trap?

- o Anticline trap
- o Salt dome trap
- o Deltaic trap
- o Fault trap
- 17. Question: What is the term for the process of increasing the flow of petroleum from a reservoir?
- Primary recovery
- o Secondary recovery
- o Tertiary recovery
- \circ Enhanced recovery
- 18. Question: Which type of seismic wave is typically used in seismic surveys to map subsurface structures?
- o P-wave
- o S-wave
- Surface wave
- o Rayleigh wave

19. Question: What is the primary component of natural gas?

- o Methane
- o Ethane
- o Propane
- o Butane
- 20. Question: Which of the following is NOT a factor influencing reservoir quality?
- o Porosity
- o Permeability
- o Organic content
- \circ Depth of burial
- 21. Question: What is the term for the process of breaking down organic matter into hydrocarbons?
- \circ Maturation
- Deposition
- o Diagenesis
- o Catagenesis

22. Question: Which type of rock contains the highest porosity and permeability?

- o Shale
- o Sandstone
- o Limestone

- o Granite
- 23. Question: What is the primary source of energy for the formation of petroleum?
- Geothermal heat
- Solar radiation
- Radioactive decay
- Pressure from tectonic forces

24. Question: What is the term for the process by which petroleum is extracted from the ground?

- \circ Drilling
- \circ Production
- o Extraction
- \circ Refining
- 25. Question: Which geological feature is formed by the accumulation of sediment at the mouth of a river?
- o Fault
- o Graben
- o Delta
- o Rift
- 26. Question: Which type of rock is typically formed from the accumulation of organic debris in a swampy environment?
- \circ Sandstone
- o Limestone
- o Shale
- \circ Conglomerate
- 27. Question: What is the primary mechanism responsible for petroleum migration?
- o Pressure
- o Temperature
- o Gravity
- o Capillarity
- 28. Question: What is the primary component of crude oil?
- o Methane
- o Ethane
- o Octane
- \circ Asphaltene
- 29. Question: Which type of trap is formed by the upward movement of salt within the Earth's crust?
- \circ Salt dome trap
- \circ Fault trap
- Anticline trap
- \circ Stratigraphic trap
- 30. Question: What is the term for the process by which petroleum moves vertically through rock layers?
- o Seepage
- \circ Migration

- o Capillarity
- \circ Diffusion
- 31. Question: Which of the following is NOT a type of rock?
- o Sedimentary
- o Metamorphic
- o Igneous
- o Elemental

32. Question: What is the process by which rocks are broken down into smaller fragments?

- \circ Erosion
- \circ Weathering
- Sedimentation
- \circ Deposition
- 33. Question: Which type of rock is formed from the cooling and solidification of magma or lava?
- o Sedimentary
- o Metamorphic
- \circ Igneous
- o Conglomerate
- 34. Question: What is the term for the process by which sediments are compacted and cemented together to form rock?
- o Lithification
- o Precipitation
- Fossilization
- o Agglomeration
- 35. Question: Which type of rock is typically formed from the accumulation of organic matter in marine environments?
- o Sandstone
- o Shale
- o Limestone
- o Granite

36. Question: What is the term for a naturally occurring concentration of one or more minerals?

- o Rock
- o Ore
- o Pebble
- o Sediment

37. Question: Which of the following is NOT a mineral?

- o Quartz
- o Coal
- o Diamond
- o Feldspar

38. Question: What is the hardest naturally occurring substance on Earth?

- o Quartz
- o Diamond

- o Calcite
- o Feldspar
- 39. Question: What is the term for the process by which one type of rock transforms into another due to heat and pressure?
- Weathering
- \circ Erosion
- \circ Deposition
- Metamorphism

40. Question: What is the name of the scale used to measure the hardness of minerals?

- \circ Richter scale
- $\circ \ \ \text{Mohs scale}$
- Kelvin scale
- \circ Beaufort scale



Shri Shivaji Education Society, Amravati's SCIENCE COLLEGE



Congress Nagar, Nagpur-12 (M.S.), India

Accredited with CGPA of 3.51 at 'A+' grade by NAAC, Bangalore A "College with Potential for Excellence" identified by UGC New Delhi. Institutional Member of APQN Recognized Centre for Higher Learning and Research Mentor College under 'PARAMARSH Scheme', UGC, New Delhi

<u>Add-on Course</u> Course Exam Name: Certificate Course in Basic Petroleum Geology						
Name of Student:				 INSTRUCTIONS FOR FILLING THE SHEET 1. This sheet should not be folded or crushed. 2. Use only blue/ black ball point pen to fill the circles. 3. Use of pencil is strictly prohibited. 4. Circles should be darkened completely and properly. 5. Cutting and erasing on this sheet is not allowed. 		
Roll No.: Session: 2019-20						
Test Date: 4/0	4/2020	Max. Marks: 80		6. Do not use any stray marks on the sheet. 7. Do not use marker or white fluid to hide the mark. WRONG METHODS CORRECT METHOD (CORRECT METHOD) (CORRECT		
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Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Geology

Certificate course in Basic Petroleum Geology

Session 2019-2020

Marksheet

S		Theory (80)	Practical (20)Total	Total (100)	Grade
		72	16	88	A t
2		62	10	72	А
3		70	17	87	A +
4		60	13	73	A
5	Bharne A Sameer	56	18	74	A
6	Ku Chaurasia S Aditi	58	16	74	А
7	Ku Chopkar P Pallavi	52	18	70	А
8	Dalal D Parag	58	12	70	A
9	Ku Dhote S Sujata	68	11	79	A+
10	Ku Dongarwar W Anjali	60	14	74	А
11	Ku Dubey S Mahima	56	16	72	А
12	Gadikar R Rahul	66	13	79	A+
13	Ku Gedam U Shivangi	66	18	84	A+
14	Ku Gurumukhi S Vaibhavi	46	17	63	А
15	Ku Kale D Gouri	48	15	63	А
16	Mandpe R Vinit	80	16	96	A+
17	Ku Motghare M Mrunmai	58	15	73	A
18	Ku Parate K Rameshwari	74	18	92	A+
19	Sakharwade A Mayur	66	13	79	A+
20	Shiv K Kushagra	72	13	85	A+
21	Tiwari A Sanchit	56	16	72	A
22	Yadav R Dheeraj	70	16	86	A+
23	Bawane P Nilesh	50	17	67	Α
24	Bhotmange A Aachal	72	16	88	A+
25	Ku Ghosh A Swagata S	56	18	74	A
25		48	13	61	A
	Katore D Ashish				
27	Khadatkar V Prasad	48	20	68	A

28	Kutarmare A Shashank	70	17	87	A+
29	Ku Meshram J Vrudali	60	13	73	А
30	Ku Nannaware D Vrushali	74	16	90	A+
31	Ku Nehare M Snehal	62	18	80	A+
32	Patil R Saurabh	62	11	73	А
		60	16	76	A+
33	Ku Raut P Saurabhi		18	86	A+
34	Sarise P Pavan	68	15	57	B+
35	Ku Sayyed M Aamirali	42			
36	Ku Shambahrkar D Ruchi	68	18	86	A+
37	Ku Tayade R Pratiksha	48	13	61	A
38	Ku Tembhe R Snehal	52	16	68	A
39	Wairagade V Saurabh	54	13	67	A
40	Ku Baraskar K Shraddha	44	17	61	A
41	Chavhan S Swapnil	72	18	90	A+
42	Gajbhiye Y Siddhant	64	12	76	A+
43	Ku Ghormade B Apurva	66	18	84	A+
44	Ku Jagdish D Ankita	56	15	71	А
45	Joshi D Mayuresh	68	18	86	A+
46	Ku Kolhe G Rutuja	66	13	79	A+
47	Ku Kubade R Kamakshi	70	18	88	A+
48	Ku Kukde S Mansi	36	12	48	В
49	Nikhare S Piyush	60	11	71	А
50	Nimje CPranav	70	17	87	A+
51	Ku Shelke I Deoyani	60	14	74	A
52	Tekade A Aniruddha	56	18	74	А
53	Thakare J Rohit	64	17	81	A+
54	Umredkar R Devesh	58	16	74	A
55	Yadav V Tushar	54	16	70	А

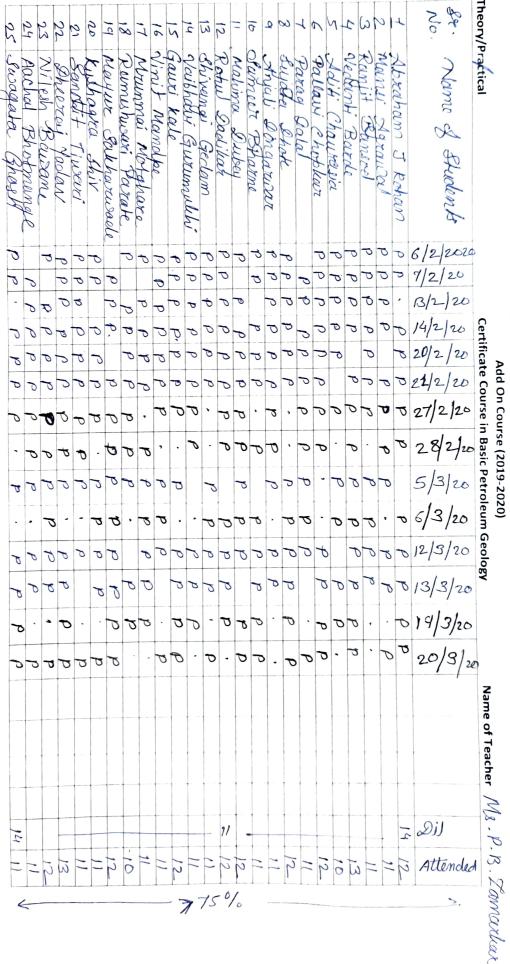
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Course Coordinator Ms. P. B. Zamarkar

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HEAD Department of Geology S. S. E. S. Amravati's St. 109 Cr. 1097.



SSESA's Science College, Congress Nagar, Nagpur

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CERTIFICATE

Mr./Ku. Mansi Agrawal is awarded with certificate on successful completion of the course entitled, Certificate course in Basic Petroleum Geology.

Session 2019-20 under Add-on course conducted for 30 hours from 06/02/2020 to 24/03/2020 by Department of Geology, SSESA's, Science College, congress Nagar, Nagpur 440012.

He/She has passed the Examination with 'A' Grade.

Incelas

Ms. P B Zamarkar Coordinator, Dept. of Geology

phon

Prof. M. P. Dhore Principal, Science College Nagpur

Shri Shivaji Education Society Amravati's Science College, Congress Nagar Nagpur Certificate course in Basic Petroleum Geology

Session 2019-2020

Feedback Form

29/03/2020

Participate Information

Student Name:

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Please rate the following aspects of the program on a scale from 1 to 4, with 1 being "Poor" and 4 being "Excellent"

Q.1 How would you rate overall content of the course?

