



LEAD CITY UNIVERSITY

Faculty of Basic Medical and Applied Sciences

Department of Microbiology

COURSE PARTICULARS

Course code: MCB 414

Course Title: Petroleum Microbiology

No. of Units: 3

Status: Part Time/Compulsory

LECTURER'S DETAILS

Name: Prof. AO Adejuwon

Qualifications: B.Sc., M.Sc., Ph.D. (Microbiology) (Ife)

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Area of Specialization: Microbial Physiology and Metabolism

COURSE DESCRIPTION: The biogenesis of fossil fuels with emphasis on the role of microorganisms; Petroleum prospecting and secondary recovery; Microbial corrosion of pipes and equipment; Methanogenesis and methanotrophy; Effects of oil spill on microbial activities in aquatic and terrestrial ecosystems; Biodeterioration and biotransformation of hydrocarbons.

COURSE OBJECTIVES: Enable students understand

- i) The genesis of crude oil and fossils
- ii) The importance of the use of microorganisms as index for crude oil exploration

ASSESSMENT

Class Attendance	10 marks
Tests and Assignments	30 marks
Final Examination	60 marks

LECTURE PLAN

Week	Topic
Week 1	The biogenesis of fossil fuels with emphasis on the role of microorganisms I
Week 2	The biogenesis of fossil fuels with emphasis on the role of microorganisms II
Week 3	Petroleum prospecting and secondary recovery
Week 4	Microbial corrosion of pipes and equipment
Week 5	Mid semester Test
Week 6	Methanogenesis and methanotrophy I
Week 7	Methanogenesis and methanotrophy II
Week 8	Effects of oil spill on microbial activities in aquatic and terrestrial ecosystems I
Week 9	Effects of oil spill on microbial activities in aquatic and terrestrial ecosystems II
Week 10	Biodeterioration and biotransformation of hydrocarbons I
Week 11	Biodeterioration and biotransformation of hydrocarbons II
Week 12	Revision

READING LIST

- 1 Nester, E.W., Anderson, D.G., Roberts, Jr., C.E., Pearsall, N.N. and Nester, M.T. (2001). *Microbiology: A Human Perspective*. 3rd Edition. McGraw- Hill Higher Education, Boston. 820pp.
2. Talaro, K.P. and Talaro, A. (2002). *Foundations in Microbiology*. 4th Edition. McGraw-Hill Higher Education, Boston. 834pp.

TUTORIAL QUESTIONS

- 1a. Discuss the efforts made by man to combat oil pollution
- 1b. Discuss and comment on the factors that may contribute to corrosion of oil-field equipment
2. Discuss and comment on the microbial genesis of fossil fuel
3. Discuss and comment on the problems encountered in the classification of crude oil
4. Discuss and comment on any two methods employed in the clearing of an oil spill
5. With particular reference to Nigeria, distinguish between the various sources of petroleum Spillage
6. Discuss the ecological effects of oil spills in an environment
7. Discuss the carbon cycle in relation to petroleum exploration
8. Discuss the process of rock formation bearing in mind “the carbon cycle”
9. Extensively write the hypothetical genesis petroleum
10. Write explicitly on the prospect for oil with the aid of microbial indicators
11. Write briefly on the properties four refined petroleum products
12. How would you classify crude oil?