

SECTION A

The University

A.1. Name and Address of the University:

University of Port Harcourt, Choba, P.M.B 5323, Port Harcourt, Rivers State, Nigeria

Website: www.uniport.edu.ng

A.2. Date Established: 1977

The University of Port Harcourt was founded as a College of the University of Lagos in 1975 and gained the status of a University in 1977.

A.3. Name and Qualification of Vice Chancellor:

Professor N. E. S. Lale

ndowa.lale@uniport.edu.ng

A.4. Mission, Vision Philosophy and Objectives of the University

Mission

The Mission of the University of Port Harcourt is the pursuit of academic excellence, advancement of knowledge and community service through quality teaching, life-long learning, social inclusion, strengthening civil society and policy-relevant research that addresses the challenges of contemporary society. To achieve this Mission, the University is guided by the spirit of enquiry, self-reliance, fairness, ethical and professional standards of the disciplines.

Vision

*“The University of Port Harcourt aims to be ranked among the best Universities in Africa, renowned for its teaching, **research, innovation and knowledge transfer.**”*

(Not a limited vision but deliberately focused on Africa)

Philosophy

“The University of Port Harcourt is committed to academic freedom, tolerance, probity, equal opportunity and respect for cultural diversity”

A.5. Organization, Administration and Control

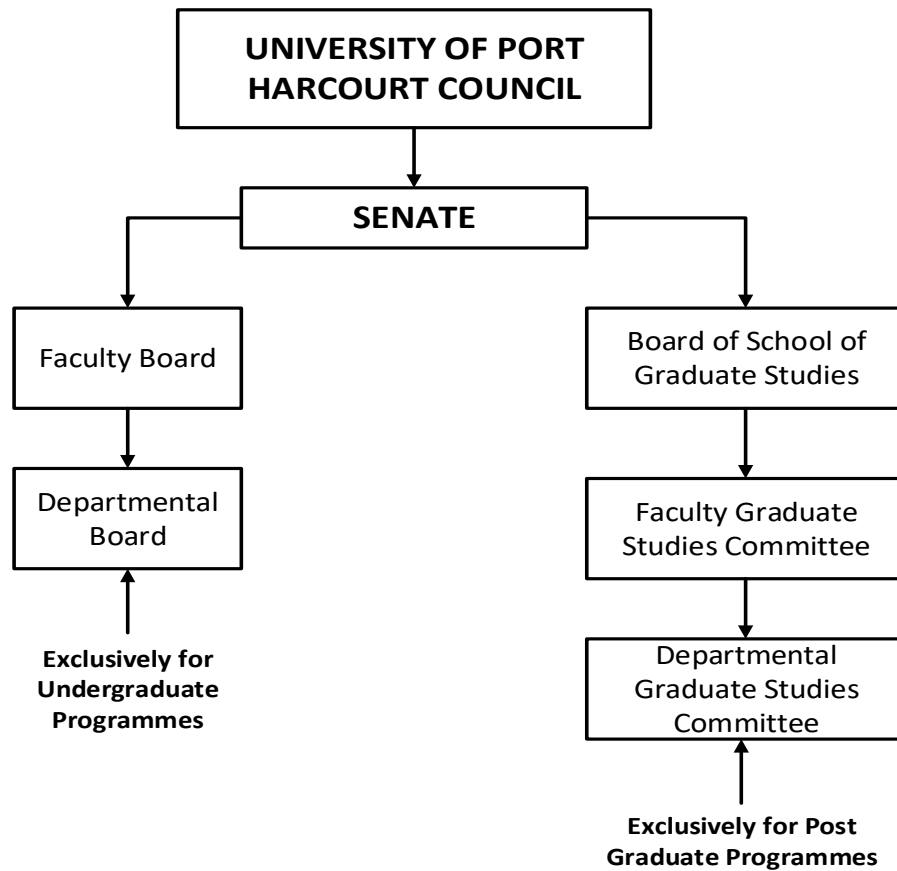


Figure 1: Organizational Structure, Administration and Control

SECTION B

ACADEMIC MATTERS

B.1. Name of Faculty and Department

Faculty of Engineering, Department of Petroleum and Gas Engineering

B.2. Brief History of the Programme

The Federal Government of Nigeria founded the University of Port Harcourt in 1975 as a college of the University of Lagos. The college gained the University status in 1977. The academic units of the University are organized into faculties and Departments. One of such academic units is the Faculty of Engineering. The faculty started in 1979 with two programmes, viz: Electrical and Petroleum Engineering. Other programmes which were added later included Chemical Engineering in 1982, Civil Engineering in 1983, Mechanical Engineering in 1988, Gas Engineering and Environmental Engineering in 2000. In 1999 the Electrical Engineering programme was upgraded to Electrical/Electronics Engineering programme, while the now upgraded Petroleum and Gas Engineering Department teaches and conducts research in Petroleum and Gas Engineering.

Petroleum and Gas Engineering is the practical application of the basic sciences of physics, chemistry, mathematics and geology, and all the Engineering sciences to the development, recovery and processing of oil and gas. Engineering problems must be solved with due consideration to economic factors, and the petroleum and gas engineer must be thoroughly familiar with the basic economic relationships which involve investment, operating expenses, taxation and profitability analysis. If you are interested in becoming involved in solving today's energy problems, then consider a career in Petroleum and Gas Engineering where initiatives and engineering skills of the highest order are essential, but equally important is the ability of the petroleum and gas engineer to work harmoniously with his or her associates. In oil and gas development, the petroleum and gas engineer supervises the drilling of wells and their completion, if oil or gas is discovered. In the recovery of crude oil and natural gas, the petroleum and gas engineers aim at:

- 1) Controlling and efficiently using the natural energy in an underground reservoir
- 2) Providing additional energy by injecting fluids into the reservoir;
- 3) Increasing the flow capacity of the reservoir or the petroleum in it through sound engineering techniques;

- 4) Reducing the cost of oil and gas recovery, production and transportation; and
- 5) Minimizing waste and protecting the environment

Compared with other branches of engineering, Petroleum and gas Engineering is a relatively new professional field. However, because of the rapidly increasing demand for oil and gas and the advances in petroleum technology, it has attained an important position. The unique problems of the oil and gas industry have stimulated the demand for men and women trained in such specialties as reservoir engineering, production engineering, drilling engineering, natural gas engineering, and petroleum economics. Since the petroleum industry is expanding rapidly in many parts of the world, ample opportunities for travel and advancement of positions of high salaries and marked responsibilities are to be found in the profession.

Over the years, students' population has increased steadily; many of which have graduated with very impressive degree classes, including the distinction category. Many of these graduates are working with some of the key industries around Port Harcourt and beyond. We note with pride that many of our graduates have excelled at their places of work, particularly those in the oil sector.

B.3. Philosophy, aims and objectives of the programme

Philosophy

The philosophy of the programme is to produce competent Petroleum and Gas Engineers as well as qualified teaching and technical staff, needed to meet the manpower requirements in the global oil and gas sector.

Aims and Objectives

The aims and objectives are:

- (i) To provide the much needed manpower required to drive the oil and gas sector development in the country and beyond.
- (ii) To produce competent petroleum and gas engineering graduates that should be confident enough to establish a small engineering business if ready –made jobs are not available.
- (iii) To offer internationally competitive and locally responsive postgraduate training.

B.4. Curriculum

B.4.1. Master in Engineering Degree

The required post-graduate courses, depending on the area of specialization, are listed below. This is in compliance with the Benchmark Minimum Academic Standards (BMAS) requirement. Students on full-time are expected to complete the course work in one session while part-time students or students without a background in petroleum engineering, may complete the course work in two sessions.

Courses for Students with Petroleum Engineering Background

M. ENG. Petroleum Engineering (Reservoir Engineering)

1st Semester

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 801.1	Advanced Reservoir Engineering
PNG 805.1	Advanced Evaluation of Oil and Gas Properties
PNG 814.1	Improved Recovery Method.
CGS 801.1	ICT and Research Method

2nd Semester

PNG 806.2	Well Testing Analysis
PNG 807.2	Numerical Reservoir Simulation
PNG 820.2	Graduate Seminar in Petroleum Engineering
PNG 830.2	M. Eng Dissertation
CGS 802.2	Management & Entrepreneurship

Elective Courses

PNG 801.1	Advanced Reservoir Analysis
PNG 802.1	Advanced Gas Engineering
PNG 803.1	Multiphase Flow in Pipes
PNG 806.2	Well Test Analysis
PNG 813.2	Artificial Lift Methods

M.ENG Petroleum Engineering (Production Engineering)

1st Semester

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 803.1	Multiphase Flow in Pipes
PNG 805.1	Advanced Evaluation of Oil and Gas Properties
PNG	Petroleum Engineering Electives.
CGS 801.1	ICT and Research Method

2nd semester

PNG 804.2	Advanced Formation Evaluations
PNG 813.2	Artificial Lift Methods
PNG 820.2	Graduate Seminar in Petroleum Engineering
PNG 830.2	M.Eng Dissertation
PNG 802.2	Management & Entrepreneurship

Elective Courses

PNG 801.1	Advanced Reservoir Analysis
PNG 802.1	Advanced Gas Engineering
PNG 808.1	Drilling Optimization
PNG 806.1	Well Test Analysis
PNG 816.2	Rock Mechanics

M.ENG Petroleum Engineering (Petroleum Economics)

1st Semester

ECN 500.1	Micro Economics
PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 805.1	Advanced Evaluation of Oil and Gas Properties
PNG 809.1	Alternative Hydrocarbon Sources (Oil, Shale Coal, Tar Sands)
PNG	Petroleum Engineering Elective
CGS 801.1	ICT and Research Method

2nd Semester

FIN 501.2	Micro Economics
MGT 860.2	Production management (Formally MGT 660.2)
PNG 811.2	Risk Analysis in Petroleum Ventures
PNG 820.2	Graduate Seminar in Petroleum Economics
PNG 830.2	M.Eng Dissertation
CGS 802.2	Management & Entrepreneurship

Elective courses

PNG 802.1	Advanced Gas Engineering
PNG 803.1	Multiphase Flow in Pipes
PNG 804.2	Advanced Formation Evaluation
PNG 810.2	Coal Conversion Processes
PNG 815.2	Thermal Recovery Method

M.ENG Petroleum Engineering (Gas Engineering)**1st Semester**

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 802.1	Advanced Gas Engineering
PNG 805.1	Advanced Evaluation of Oil and Gas Properties
PNG	Petroleum Engineering Elective
CGS 801.1	ICT and Research Method

2nd Semester

PNG 810.2	Coal conversion Process Evaluation
PNG 812.2	LNG Processing
PNG 820.2	Graduate Seminar in Petroleum Engineering
PNG 830.2	M.Eng Dissertation
CGS 802.2	Management & Entrepreneurship

Elective Courses

PNG 801.1	Advanced Reservoir Analysis
PNG 803.1	Multiphase Flow in Pipes
PNG 809.1	Alternative Hydrocarbon Sources (Oil, Shale Coal, Tar Sands)
PNG 806.2	Well Test Analysis
PNG 807.2	Numerical Reservoir Simulation
PNG 307.2	Fundamentals of Reservoir Engineering

M.ENG Petroleum Engineering (Drilling Engineering)

1st Semester

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 805.1	Advanced Evaluation of Oil and Gas Properties
PNG 808.1	Drilling Optimization
PNG	Petroleum Engineering Elective
CGS 801.1	ICT and Research Method

2nd Semester

PNG 804.2	Advanced Formation Evaluation
PNG 816.2	Rock Mechanics
PNG 820.2	Graduate Seminar in Petroleum Engineering
PNG 830.2	M.Eng Dissertation
CGS 802.2	Management & Entrepreneurship

Courses for Students without Petroleum Engineering Background

Specialization in Gas Engineering

1st Semester

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 803.1	Multiphase Flow in Pipes
PNG 302.1	Rock and Fluid Properties
PNG 403.1	Natural Gas Engineering
PNG 501.1	Well Test
CGS 801.1	ICT and Research Method

2nd Semester

PNG 810.2	Coal Conversion Process
PNG 812.2	LNG Processing
PNG 807.2	Numerical Reservoir Simulation
PNG 307.2	Fundamentals of Reservoir Engineering
PNG 820.2	Graduate Seminar in Petroleum Engineering
CGS 802.2	Management & Entrepreneurship

Specialization in Drilling Engineering**1st Semester**

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 803.1	Multiphase Flow in Pipes
PNG 302.1	Rock and Fluid Properties
PNG 402.1	Formation Evaluation I
PNG 401.1	Drilling Engineering
PNG 404.1	Well Completion and Work over
CGS 801.1	ICT and Research Method

2nd Semester

PNG 804.2	Advanced Formation Evaluation
PNG 306.2	Drilling Engineering I
PNG 304.2	Drilling Fluid Technology
PNG 816.2	Rock Mechanics
PNG 820.2	Graduate Seminar in Petroleum Engineering
CGS 802.2	Management & Entrepreneurship

Specialization in Production Engineering

1stSemester

PNG 800.1	Mathematical Techniques in Petroleum Engineering
PNG 803.1	Multiphase Flow in Pipes
PNG 404.1	Well Completion and Workover
PNG 502.1	Petroleum Production Engineering II
PNG 402.1	Formation Evaluation I
CGS 801.1	ICT and Research Method

2ndSemester

PNG 804.2	Advanced Formation Evaluation
PNG 813.2	Artificial Lift Methods
PNG 308.2	Petroleum Production I
PNG 306.2	Drilling Engineering I
PNG 820.2	Graduate Seminar in Petroleum Engineering
CGS 802.2	Management & Entrepreneurship

Specialization in Petroleum Economics

1st Semester

PNG 800.1	Mathematical Techniques in Petroleum Engineering
ECN 500.1	Micro Economics
PNG 302.1	Rock and Fluid Properties
PNG 402.1	Formation Evaluation I
PNG 404.1	Well Completion and Workover
CGS 801.1	ICT and Research Method

2nd Semester

ECN 501.2	Micro Economics
MGT 860.2	Production Management (Formally MGT 660.2)
PNG 811.2	Risk Analysis in Petroleum Ventures
PNG 306.2	Drilling Engineering I
PNG 503.1	Enhanced Recovery Methods
PNG 820.2	Graduate Seminar in Petroleum Engineering
CGS 802.2	Management & Entrepreneurship

B.5. Student Admission, Retention and Graduation Policy

B.5.1 Masters Programme (M.ENG)

To be admitted into the M. ENG degree programme in Petroleum and Gas Engineering, each applicant must possess a good bachelor's degree (B.ENG) or an acceptable postgraduate diploma (PGD) in Petroleum Engineering with a minimum of CGPA of 3.0 (or 3.5 for PGD holders) obtained from a recognized university. Bachelor's degree holders from other related fields of engineering with a minimum of second class upper division may also be considered.

Duration

The programme shall last for a minimum period of three (3) semesters and a maximum period of six (6) semesters of full time study, or a minimum period of four (4) semesters and a maximum period of eight (8) semesters of part time study.

Criteria/Procedure for the Award of the M.ENG

In addition to the general requirements for programmes leading to a Master's degree, the candidate must fulfil the following departmental requirements:

- I. Be registered for the programme for at least the equivalent of three (3) semesters of full time study or four (4) semesters of part time study.
- II. Choose and specialize in one of the available options.
- III. Pass all the relevant courses taken for the programme with a minimum grade of C.

- IV. Present a seminar, at least one conference presentation and a journal article, together with a dissertation on issues of current national, professional and academic interest, in which adequate knowledge of the underlying principles of the taught courses is demonstrated.

Grading System

The following system of Grade Points shall be used for the postgraduate programme:

Mark/score	Grade	Point
70% & above	A	5.00
60-69	B	4.00
50-59	C	3.00
0-49	F	0.00

Policy on Withdrawal and Expulsion

A student may be asked to withdraw or expelled on grounds of the following:

- I. Unsatisfactory academic performance such as having a CGPA of less than 2.75 at the end of first year course work.
- II. Failing a course twice.
- III. Poor and irregular lecture attendance.
- IV. Ill health
- V. Misbehaviour
- VI. Examination Malpractice

A student may also voluntarily withdraw his/her studentship.

Definition of Examination Malpractice

Examination malpractice shall be defined as all forms of cheating, which directly or indirectly falsify the ability of the students. These shall include cheating within an examination hall, cheating outside an examination hall and any involvement in all examination related offences. Forms of cheating are categorized as follows:

Cheating Within an Examination Hall/Room

- Copying from one another or exchanging questions/answer sheets.
- Bringing in prepared answers, copying from textbooks, notebooks, laboratory specimens and any other instructional aids smuggled into the hall.
- Collaboration with Invigilator/Lecturer, where it involves the lecturer-invigilator providing written/oral answers to a student in the examination hall.
- Oral/written communication between and amongst students.
- Bringing in prepared answer written on any part of the body.
- Receiving information whether written or oral from any person(s) outside an examination hall.
- Refusal to stop writing at the end, within half a minute in an examination.
- Impersonation.
- Illegal removal of answer scripts from the examination hall.
- Non-submission of answer scripts from the examination.

Another Form of Examination Malpractice

Plagiarism is a form of examination malpractice and should be investigated and punished in the same way as cheating in the examination hall/room. Plagiarism is the use of another person's work (i.e. in writing term papers, final year project, seminar presentation, etc) without appropriate acknowledgement both in the text and in the references at the end.

B.6. Enrolment and Graduation Data

YEAR	ENROLEMENT						TOTAL NO. AT GRADUATION
	FULL TIME		PART TIME		NATIONALITIES		
	Male	Female	Male	Female	Nigerian	Non - Nigerians	
2015/2016	40	15	2	1	58	---	---
2014/2015	33	8	---	---	41	---	---
2013/2014	38	5	----	2	45	---	27
2012/2013	30	9	3	---	42	---	30
2011/2012	35	6	---	---	41	---	31

YEAR	GRADUATE						TOTAL NO. AT GRADUATION
	FULL TIME		PART TIME		NATIONALITIES		
	Male	Female	Male	Female	Nigerian	Non - Nigerians	
2015/2016	26	4	2	1	33	---	33
2014/2015	19	5	---	---	24	---	24
2013/2014	21	4	----	2	27	---	27
2012/2013	23	4	3	---	30	---	30
2011/2012	26	5	---	---	31	---	31

B.7. Student's Workload

Masters Programme (M.ENG) Gas Option

1st Semester

Grouping	Course Codes	Course Titles	Pre-requisite	Credit Units	Contact Hours Per Week			Total Hours Per Week
					Lecture	Tutorial	Practical	
General	CGS 801.1	ICT and Research Method	nil	2	6	2	2	10
Core Courses	PNG 800.1,	Mathematical Techniques;	nil	3	3	2	nil	5
	PNG 802.1	Advance Gas Engineering	nil	3	3	2	nil	5
	PNG 805.1	Advance Evaluation of Oil & Gas Properties	nil	3	3	2	nil	5
Elective Courses	PNG 809.1	Alternate Hydrocarbon Sources	nil	3	3	2	nil	5

2nd Semester

Grouping	Course Codes	Course Titles	Pre-requisite	Credit Units	Contact Hours Per Week			Total Hours Per Week
					Lecture	Tutorial	Practical	
General	CGS 802.2	Management & Entrepreneurship	nil	2	6	2	2	10
Core Courses	PNG 810.2,	Coal Conversion Processes;	nil	3	3	2	nil	5
	PNG 812.2	LNG Processing	nil	3	3	2	nil	5
	PNG 820.2	Graduate Seminar	nil	3	3	2	nil	5
Thesis/ Dissertation	PNG 830.2	M.ENG Dissertation	nil	6			5	5

N:B General courses are the same for all the options in the Masters Programme with 2 Credit units. All other courses are 3 credit units, while the final Dissertation is 6 credit units. See section B4 for other options. The total number of hours per week is the same for all the various options.

B.8. Examination

The normal university procedure is observed. Examination questions are vetted at the Departmental meeting. Degree examination questions are sent to the external examiner for moderation before the exams are conducted. Results are generally moderated at the board meeting conveyed specifically for examination results consideration at Departmental, Faculty and College levels. It takes an average of two (2) to three (3) Months, after examinations before the results are released.

Appraise the standard of examination based on the:

- | | |
|--|-----------|
| a) Coverage of the syllabus content | Very Good |
| b) Quality of students' answers to the various question | Very Good |
| c) Quality of practical work, continuous assessment/degree projects | Very Good |
| d) Students' readiness for the level of manpower he/she is being trained for | Very Good |
| e) External examination or moderation scheme | Very Good |

Matters arising from examinations are handled by the departmental board at the departmental level. In the case of examination malpractice, such matters are forwarded to the Faculty board and then to the University central committee

B.9. Research/Project

B.9.1. Research/Project Policy, Methodology and Thrust of the Programme

Research is an integral part of the programme and is aimed at solving real life problems in petroleum and gas Engineering applications. Research proposal is submitted, which details the aim, objectives, statement of problems to be solved and methodology to be applied. The students are assigned to supervisors to guide on the accomplishment.

B.9.2. List of Selected Project Dissertation in the Programme in the Last Three (3) Years

1. Efficient Matrix Acidizing Design for Enhanced Productivity
2. Effective Chemical Sand Consolidation Design for Oil Wells
3. Optimization of Hole Cleaning Using a Dynamic Real – Time Cutting Monitoring Model.
4. Experimental Study of the Visco-Elastic Effect of Exudates Gum Polymer Solution on Enhanced Oil Recovery.
5. An Improved Model for Multi-Phase Flow Metering
6. Petroleum Products Distribution and its Challenges in Nigeria (NNPC/PPMC Atlas Cove Mosimi Line): A Case Study.
7. Developing Software for Reservoir Performance Prediction.
8. Performance Evaluation of Enhanced Oil Recovery.
9. Simulation and Economic Analysis of Liquefied Petroleum Gas Production Process from Associated Gas.
10. Enhancing Oil Recovery from Highly Fractured Reservoirs through Foam Injection.
11. Evaluation of Cuttings Transport in Well Annulus Using Power Law Model.
12. Barium Sulphate Scaling Prevention
13. Software for Predicting Liquid Loading in a Gas Well.
14. Economic Evaluation of Electric Submersible Pumps and Gas Lift Wells in the Niger Delta.
15. Enhanced Recovery of Light, Medium and Heavy Crude Oils Using Selected Local Materials for Surfactant – Polymer Flooding.
16. Experimental Study of the Relationship Between Porosity and a Well Sorted Unconsolidated Sand Grain Sizes.
17. Development of Models for Determining Flowing Bottomhole Pressure and Liquid Hold in Vertical Two Phase Flow.
18. Comparative Study of Different Salts on Hydration of Bentonite.
19. Treatment and Disposal of Oil Contaminated Soil Using Thermal Desorption Unit (TDU).

20. Corrosion Detection and Control in Production Operations.
21. Subsea Production Process and Optimisation: A Case Study of FPSO AKPO Deep Offshore Gas Condensate Field.
22. Design and Application of Water Based Drilling Fluids for HPHT Wells: A Case Study of Mafia Field.
23. Conversion of Gas to Hydrate Option For Gas Transport
24. Comparative Analysis of Enhanced Oil Recovery Using Alkaline Polymer Flooding With Local and Imported Materials.
25. Optimization of Deep Water Cementing.
26. Estimation of Minimum and Maximum Stress From Field Data and Comparative Analysis With Correlation.
27. Economics of Gas to Liquids
28. Experimental Study of Balanced Activity of Shale during Interaction with Oil Based Muds.
29. Evaluation of Viscosity Correlations for Depleting Niger Delta Gas Reservoirs.
30. Fundamental Models for the Prediction of Wax Deposition in Crude Oil Flow Lines.
31. Enhanced Recovery of Light, Medium and Heavy Oil Using Imported Surface – Polymer Flooding.
32. Laboratory Investigation of the Efficacy of Microbial Enhanced Recovery in the Niger Delta.
33. Interpretation of Contact Monitoring Using Carbon Oxygen Log for Reservoir Management in the Niger Delta.
34. Prevention and Control of Corrosion on Oil and Gas Pipelines.
35. Porosity Modelling of Unconsolidated Sand Based on Grain Size.
36. Development of Software for Predicting Parraffin and Asphaltene Deposition in Pipes and Production Reservoirs.
37. Gas Pipeline Design and Integrity Assessment Procedures.
38. Waste Management of Drilling Operations
39. Design of Semi-Intelligent Cleaning Pig for Oil and Gas Pipelines.

40. Prediction of Scaling Tendency of Produced Water in a Nigerian Oilfield.
41. Production Logging as a Tool to Enhanced Well Stimulation.
42. Hazard Assessment and Control in a Gas Processing Plant: Case Study of Old Rivers State.
43. Equivalent Circulation Density (ECD) Management in a Narrow Hole Margin in the Niger Delta of Nigeria.
44. Modelling the Effect of Shale Contamination on the Rheological Properties of Water Based Mud.
45. Produced Water Total Oil and Grease Control in a typical oil Facility.
46. Quality Assurance and Quality Control (QA/QC) of Samples of Petroleum Products in the Downstream Sector.
47. The Effect of Pressure Maintenance on Oil Recovery.
48. Optimizing Drilling Cost Through Proper Selection of Drilling Chemicals
49. Techniques for Controlling Formation Fines to Maintain Productivity.
50. Improving Oil Recovery through Gas Injection.
51. Optimization of Horizontal Well Completions in Thin Oil Column.
52. Evaluating the Effectiveness of Matrix Acidizing in Gas Wells.
53. Predicting the Produced Boil- Off Gas in Selected Liquefied Natural Gas Vessels.

B.9.3. Research Clusters and Relevance to National Development

Cluster of Research Titles	Relevance to National Development/ Thrust	Utilization of Research Findings
<ul style="list-style-type: none"> • Efficient Matrix Acidizing Design for Enhanced Productivity • Effective Chemical Sand Consolidation Design for Oil Wells • Barium Sulphate Scaling Prevention • Software for Predicting Liquid Loading in a Gas Well. • Economic Evaluation of Electric Submersible Pumps and Gas Lift Wells in the Niger Delta. • Development of Models for Determining Flowing Bottomhole Pressure and Liquid Hold in Vertical Two Phase Flow. • Corrosion Detection and Control in Production Operations. • Subsea Production Process and Optimisation: A Case Study of FPSO AKPO Deep Offshore Gas Condensate Field. • Fundamental Models for the Prediction of Wax Deposition in Crude Oil Flow Lines. • Prevention and Control of Corrosion on Oil and Gas Pipelines. • Development of Software for Predicting Paraffin and Asphaltene Deposition in Pipes and Production Reservoirs. • An Improved Model for Multi-Phase Flow Metering • Petroleum Products Distribution and its Challenges in Nigeria (NNPC/PPMC Atlas Cove Mosimi Line): A Case Study. • Design of Semi-Intelligent Cleaning Pig for Oil and Gas Pipelines. • Prediction of Scaling Tendency of Produced Water in a Nigerian Oilfield. • Production Logging as a Tool to Enhanced Well Stimulation. • Techniques for Controlling Formation Fines to Maintain Productivity. 	Production Optimization / Flow Assurance	Field Application

<ul style="list-style-type: none"> Evaluating the Effectiveness of Matrix Acidizing in Gas Wells. 		
<ul style="list-style-type: none"> Optimization of Hole Cleaning Using a Dynamic Real – Time Cutting Monitoring Model. Evaluation of Cuttings Transport in Well Annulus Using Power Law Model. Design and Application of Water Based Drilling Fluids for HPHT Wells: A Case Study of Mafia Field. Comparative Study of Different Salts on Hydration of Bentonite. Experimental Study of Balanced Activity of Shale during Interaction with Oil Based Muds. Modelling the Effect of Shale Contamination on the Rheological Properties of Water Based Mud. Optimization of Deep Water Cementing. Estimation of Minimum and Maximum Stress From Field Data and Comparative Analysis With Correlation. Equivalent Circulation Density (ECD) Management in a Narrow Hole Margin in the Niger Delta of Nigeria. Optimizing Drilling Cost Through Proper Selection of Drilling Chemicals Optimiization of Horizontal Well Completions in Thin Oil Column. 	Drilling Optimization	Field Application
<ul style="list-style-type: none"> Experimental Study of the Visco-Elastic Effect of Exudates Gum Polymer Solution on Enhanced Oil Recovery. Experimental Study of the Relationship Between Porosity and a Well Sorted Unconsolidated Sand Grain Sizes. Performance Evaluation of Enhanced Oil Recovery. Enhancing Oil Recovery from Highly Fractured Reservoirs through Foam Injection. Developing Software for Reservoir Performance Prediction. Interpretation of Contact Monitoring Using Carbon Oxygen Log for Reservoir Management in the 	Enhanced Oil Recovery and Reservoir Management	Field Applications

<p>Niger Delta.</p> <ul style="list-style-type: none"> • Porosity Modelling of Unconsolidated Sand Based on Grain Size. • Enhanced Recovery of Light, Medium and Heavy Crude Oils Using Selected Local Materials for Surfactant – Polymer Flooding. • Comparative Analysis of Enhanced Oil Recovery Using Alkaline Polymer Flooding With Local and Imported Materials. • Enhanced Recovery of Light, Medium and Heavy Oil Using Imported Surface – Polymer Flooding. • Laboratory Investigation of the Efficacy of Microbial Enhanced Recovery in the Niger Delta. • The Effect of Pressure Maintenance on Oil Recovery. • Improving Oil Recovery through Gas Injection. 		
<ul style="list-style-type: none"> • Simulation and Economic Analysis of Liquefied Petroleum Gas Production Process from Associated Gas. • Conversion of Gas to Hydrate Option For Gas Transport • Economics of Gas to Liquids • Evaluation of Viscosity Correlations for Depleting Niger Delta Gas Reservoirs. • Gas Pipeline Design and Integrity Assessment Procedures. • Predicting the Produced Boil- Off Gas in Selected Liquefied Natural Gas Vessels. 	Natural Gas Engineering & Utilization	Field Application
<ul style="list-style-type: none"> • Treatment and Disposal of Oil Contaminated Soil Using Thermal Desorption Unit (TDU). • Waste Management of Drilling Operations • Hazard Assessment and Control in a Gas Processing Plant: Case Study of Old Rivers State. • Produced Water Total Oil and Grease Control in a typical oil Facility. • Quality Assurance and Quality Control (QA/QC) of Samples of Petroleum Products in the Downstream Sector. 	HSE / Waste Management	Field Application

B.9.4. List of Selected Publications Resulting from the Programme in the Last Three (3) Years

1. Osokogwu, U; Emuchay, D; Ottah, D.G; Aliu, S. and Ajeinka, J.A (2014): Improved Method of Predicting and Monitoring Flow Assurance Problems in the Niger Delta Using PROSYS. **SPE 172443, NAICE**
2. Uche Osokogwu, Joseph Atubokiki Ajeinka, and Andrew Nsika Okon (2014): Evaluating the Effects of Additives on Drilling Fluid Characteristics, *International Journal of Engineering Sciences & Research Technology (IJESRT)*, 3(6): 676 – 687.
3. Enyekwe A.E. and Ajeinka, J.A. (2014): Comparative Analysis of Permanent Downhole Gauges and their Applications, **SPE 172435, NAICE**
4. Abiola, S. Onikoyi; Vincent, O.Nwabueze; Felix.O. Okoro, and J.A.Ajeinka (2014): Review of Sand Production from Oil Well Completions across Depositional Environments in the Niger Delta **SPE 172484, NAICE.**
5. A. Joseph and J.A. Ajeinka (2014): A Practical Approach to the Evaluation of Subcritical Multiphase Flow through Down-hole Safety Valves (Storm Chokes), *Journal of Petroleum and Gas Engineering.*
6. Ukwu, A.K and Onyekonwu, M.O (2014): Advancement in Material Balance Analysis. **SPE 172415, NAICE.**
7. Oriji, A.B and Appah, D (2014): Analysis of Nigeria Local Cement Slurry Design in Oil and Gas Well Cementation. *Academic Research International*. 5(4): 176-181
8. Oriji, A. Boniface and Ekp Baseey (2014): Analysis of Fracking Fluids Used During Hydraulic Fracturing in Oil and Gas Well Operations. **SPE 170399, Doha.**
9. Oriji, A. Boniface, Achibong Rose and Uche Osokogwu (2014): Field Study of Critical Success Factors in Workover Planning and Applications. **SPE 172478, NAICE.**
10. Ofoeyeno, P; Osokogwu, U. and Oriji.A Boniface (2014): Analytical Modeling of Pipeline Failure in Multiphase Flow Due to Corrosion in Niger Delta Region, *Scientia Africana, NIGERIA*
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SECTION C

STAFFING

C.1 Academic Staff

Table C1: List of Academic Staff in the Programme

S/No	Name(s)	Qualification	Field of Specialization	Designation	GL/STEP
1	A. Ajienka	B.Sc (Ibadan), M.Eng, Ph.D. (Unipor), R.Eng (5285)	Petroleum Production Engg/ Multiphase Fluid Flow in Pipes	Professor	CONUASS 7/10
2	M. O. Onyekonwo	B.Sc. (Ibadan), M.S, Ph.D (Stanford), R.Eng (3536)	Reservoir & Gas Engineering	Professor	CONUASS 7/10
3	A. Dosunmu	B.Sc (Ibadan), M.Eng Ph.D (Unipor),MNSE, R.Eng (3562)	Drilling & Gas Engineering	Professor	CONUASS 7/10
4	D. Appah	M.Sc Mining, Eng., Dip. Edu. (Baku) Ph.D (Unipor), MNSE, R.Eng (7961)	Formation Evaluation	Professor	CONUASS 7/10
5	G. J. Igwe	B.S Chem./Process Engg, (Uni. of Kiel (Germany). M. Phil Chem. Engg.(Leeds), Ph. D Chem. Engg (Bradford).	Petroleum Refining	Professor	CONUASS 7/6
6	O. F. Joel	B.Tech, Chem. Engg. (UST), M.Sc Eng Mgt. (Uniben), Ph.D Pet./Chem. UST)	Drilling & Environmental Engineering	Professor	CONUASS 7/4

7	O. O. Iledare	B.Sc Pet Engg, (Ibadan) MS Energy Resources Pittspurgh Ph.D Pet Econs (West Virginia)	Oil & Gas Economics, Petroleum Economics	Professor	CONUASS 7/10
8	G. A. Chukwu	Diploma Pet. Technology (London) 1974, B. Sc Pet Engg, (Louisiana), M. S. Pet. Engg. (Louisiana), Ph.D Pet. Engg. (Oklahoma)	Drilling Engg & Multiphase Fluid Flow in Pipes	Visiting Professor	CONUASS 7/10
9	S. S. Ikiensikimama	B.Eng., M.Eng. (Chem), M.Eng (Pet), (Uniport), Ph.D. Chem. (Unilag), R.Eng (10595)	Reservoir Engineering Petroleum Economics, Petroleum Refining	Associate Professor	CONUASS 6/4
10	B. S. Kinigoma	B.Sc (RSUST), M.Eng., (Uniport) Ph.D (Uniport)	Energy and Environmental Engineering	Senior Lecturer	CONUASS 5/7
11	A. B. Oriji	B.Eng Pet. M.Eng. Pet. (Uniport) Ph. D (Uniport)	Drilling Engineering/Drilling Fluid	Senior Lecturer	CONUASS 5/3
12	C. E. Ubani	B.Eng, M.Eng. Ph. D; Pet. Engg. (Uniport)	Formation Evaluation	Senior Lecturer	CONUASS 5/2
13	J. Amiebibama	B.Eng Pet. (Uniport), M.Eng Gas (Uniport), M.Sc. Oil & Gas Enterprise Management; P. hD (Aberdeen)	Reservoir Engineering	Lecturer I	CONUASS 4/6
14	E. Okafor	B.Eng Chem. (ESUT), M.Sc Mech.& Process Eng. (T.U.D. Germany), Ph. D. Pet. Engg. (London)	Gas Engineering	Lecturer I	CONUASS 4/5
15	U. Osokogwu	B.Eng, M.Eng. Pet.Engg (Uniport) Ph.D(in view, Cranftfield University,UK)	Production Engineering	Lecturer I	CONUASS 4/6
16	J. V. Aimikhe	B. Eng Pet. Engg, (Benin), M.Eng. Pet Engg (Uniport). PhD Gas Engg (Uniport)	Gas Engineering	Lecturer II	CONUASS 3/5
17	I. I. Azubuike	B.Eng. Polymer Eng. (FUTO), M.Eng. Pet. Engg. (Uniport).	Reservoir Engineering	Lecturer II	CONUASS 3/5

		PhD Pet. Engg. (Uniport)			
18	T. O. Odutola	B.Tech Chem.(LAUTECH), M. Sc. Pet. Engg. (AUST) PhD Pet. Engg. (Uniport)	Production Engineering	Lecturer II	CONUASS 3/5

Table C1.1: List of Courses Presently Being Taught

S/N	Name of Staff	Rank/Designation	Course Taken
1	A. Ajienka	Professor	PNG 803.1, PNG 813.2, PNG 901.1
2	M. O. Onyekonwu	Professor	PNG 800.1, PNG 801.1, PNG 806.2, PNG 807.2, PNG 901.1
3	A. Dosunmu	Professor	PNG 816.2, PNG 802.1, PNG 901.1
4	D. Appah	Professor	PNG 804.2, PNG 813.2
5	G. J. Igwe	Professor	PNG 810.2, PNG 812.2
6	O. F. Joel	Professor	PNG 820.2, PNG 808.1, PNG 304.2
7	O. O. Iledare	Professor	PNG 805.1, PNG 811.2, PNG 901.1
8	G. A. Chukwu	Professor	PNG 808.1, PNG 803.1,
9	S. S. Ikeinsikimama	Associate Professor	PNG 815.1, PNG 901.1, PNG 302.1
10	B. S. Kinigoma	Senior Lecturer	PNG 809.1, PNG 810.2
11	A. B. Oriji	Senior Lecturer	PNG 816.2, PNG 404.1, PNG 306.2

12	C. E. Ubani	Senior Lecturer	PNG 814.1, PNG 307.2, PNG 402.1
13	J. Amiebibama	Lecturer I	PNG 800.1, PNG 801.1, PNG 807.2,
14	E. Okafor	Lecturer I	PNG 802.1, PNG 812.2, PNG 403.1
15	U. Osokogwu	Lecturer I	PNG 803.1, PNG 404.1
16	J. V. Aimikhe	Lecturer II	PNG 809.1, PNG 403.1
17	I. I. Azubuike	Lecturer II	PNG 302.1, PNG 307.2
18	T. O. Odutola	Lecturer II	PNG 805.1, PNG 404.1

C.1.2 Staff Appraisal

- | | |
|---|------------------|
| a. Adequacy in number, qualification and experience (Staff to Student Ratio is 1: 7) | <i>Adequate</i> |
| b. Effectiveness of Lecturers | <i>Very Good</i> |
| c. Professional Achievements | <i>Excellent</i> |
| d. Past and on-going research efforts in the last three years | <i>Excellent</i> |
| e. Major research output of the programme in the last three years | <i>Very Good</i> |
| f. List of academic publications in reputable journals in last three sessions | <i>Very Good</i> |

Table C1.2: Thesis / Dissertation Supervision

Names of Staff	Category	Number of Students Currently being Supervised	Total Number of Students Supervised in Last 3 Years
A. Ajienka	Professor	7	23
M. O. Onyekonwu	Professor	7	25
A. Dosunmu	Professor	7	22
D. Appah	Professor	5	18
G. J. Igwe	Professor	Nil	10
O. F. Joel	Professor	6	20
O. O. Iledare	Professor	5	15
G. A. Chukwu	Professor	4	14
S. S. Ikeinsikimama	Associate Professor	3	19
B. S. Kinigoma	Senior Lecturer	5	13
A. B. Orij	Senior Lecturer	5	12
C. E. Ubani	Senior Lecturer	4	12
J. Amiebibama	Lecturer I	4	6
E. Okafor	Lecturer I	4	11

C.2**Non - Academic Staff****Table C.2.1. List of Senior Technical Staff**

LABORATORY STAFF LIST				
S/No	NAME OF STAFF	DESIGNATION	QUALIFICATION	RESPONSIBILITY
1	Mr. Gbarale, John Nwika	Chief Tech	HND, AISLT	In charge of departmental laboratory
2	Mrs. Uwajingba, Ebineppre C.	Assist. Chief Tech	HND	Assisting Chief Technologist
3	Mrs. Suwari, Caroline Preteowei	Senior Technologist	HND, B.Eng, M. ENG	Assisting Asst. Chief Technologist
4	Mr. Fulalo, Lucky Donatus	Senior Technologist	HND	Assisting Asst. Chief Technologist
5	Mr. Amukwo, James Bide	Senior Technologist	HND	In charge of Gas Eng. Laboratory.
6	Mr. China Kelvin Esor	Technologist I	HND	Assisting Snr. Tech.
7	Mrs. Ndubuisi, Elizabeth C.	Technologist II	B.Eng, M.Eng	Assisting Snr. Tech.
8	Mr. Isaiah, Samuel	Technologist II	HND, B.Eng	Laboratory Supervisor
9	Elkanah, Konye Kalio	Technologist II	B. Tech	Laboratory Supervisor
10	Mr. Ojikpo, Felix	Technologist II	HND	Laboratory Supervisor
11	Mrs. Ovwromoh, Blessing	Technologist II	B.ED, M.ED	Laboratory Supervisor

Table C.2.2. List of Senior Administrative Staff

ADMINISTRATIVE STAFF LIST				
S/No	NAME OF STAFF	DESIGNATION	QUALIFICATION	RESPONSIBILITY
1	Mrs. Uzorka Carolyn Kolise	Admin Officer	B.Sc (Ed)	Admin Head/Departmental Secretary
2	Mrs. Njoku, Joyce Ngozi	Personal Secretary	MBA, PGD HND	HOD Secretary/Admin Head
3	Mrs. Amadi, Ihuoma	Higher Executive Officer	B. Sc	Collating of Students Project, Report and general Office administration
4	Akiene Clement Sarah	Higher Executive Officer	B. Sc	Library Officer
5	Mrs. Nwauzi, Evelyn N.	Higher Executive Officer	B.Sc	Assisting Administrative Officer
6	Owhonda Blessing D.	Higher Executive Officer	B.Sc	Preparing Student Statement of Results/General Office Administration
7	Mr. Sukens Andrew	Admin Assistant	B. Sc	Gas Chair Administrative Officer

Table C.2.3. List of Junior Staff

S/No	NAME OF STAFF	DESIGNATION	QUALIFICATION	RESPONSIBILITY
1	Mrs. Didia, Sandra Chisa	Laboratory Assist	SSCE	General Assistant in the lab.
2	Mr. Tonwee, Loveday	Laboratory Assist	SSCE	General Assistant in the lab.
3	Chimele D. Deborah	Laboratory Assist	SSCE	General Assistant in the lab.
4	Kufre, Daniel Akpan	Laboratory Assist	SSCE	General Assistant in the lab.
8	Mr. Nyekweru, Egonu	Chief Clerical Officer	G.C.E.	Assisting Exam Officer
9	Mrs. Obuneze, E. Confidence	Senior Clerical Officer I	NECO	Assisting Exam Officer
10	Christiana Nwinee	Computer Operator I	G.C.E	Departmental IT Officer
11	Mrs. Didia, Charity	Clerical Officer	S.S.C.E.	Receiving Mails and Other clerical work
12	Mrs. Ejekwu, Confidence A.	Computer Operator II	Diploma in Computer	Departmental IT Officer
13	Woko Love	Caretaker	F.S.L.C.	Cleaner
14	Ebulu, Patience	Caretaker	F.S.L.C.	Cleaner
15	Ashara Leticia	Caretaker/cleaner	F.S.L.C	Messenger
16	Anthony, Beauty	Caretaker	F.S.L.C.	In charge of Gas Chair Office
17	Kenneth Chukwu	Caretaker	F.S.L.C.	Messenger

C 3: Staff Development Programme

Policy and Practice on Staff Development:

This is a central university policy. Provisions are made for non-terminal degree holders and technical staff to pursue further studies with pay. Applications are processed through the University Registrar for consideration of HOD and Dean's recommendation on such candidates for University approval for study leave with (out) pay.

There is strong staff development programme in the Department. The Department runs a viable graduate programme and all the young non PhDs are enrolled in the department. General University scholarships through its partners such as MacArthur Foundation, Fulbright, Alexander von Humboldt, SPDC, Schlumberger, Institute of Petroleum, IFP (France)/Elf collaboration, NDDC scholarship,PTDF scholarship, World Bank Africa centre of excellence in oilfield chemical research, etc are available to upgrade and update staff competence. Different oil companies and the Society of Petroleum Engineers (SPE) sponsor our staff to the SPE Annual Conference, COREN Engineering Assembly, etc. the department has largely benefited from their contributions. There is a functional university staff development programme through the University Advancement Centre (UAC). The university intensifies efforts in training its own staff within and outside the country for this unique programme.

Table C.3.1: List of Academic Staff Development Beneficiaries

S/No	Name(s)	Designation	Category of Staff Development	Duration/Date
1	A. Ajienka	Professor	SPE NAICE conference, Oil Flow Conference	Annual
2	M. O. Onyekonwu	Professor	SPE NAICE conference, Oil Flow Conference	Annual
3	A. Dosunmu	Professor	SPE NAICE conference, Oil Flow Conference	Annual
4	D. Appah	Professor	SPE NAICE conference, Oil Flow Conference	Annual
5	O. F. Joel	Professor	SPE NAICE conference, Oil Flow Conference	Annual
6	B. S. Kinigoma	Senior Lecturer	SPE NAICE conference, Oil Flow Conference	Annual
7	A. B. Oriji	Senior Lecturer	SPE NAICE conference, Oil Flow Conference	Annual
8	C. E. Ubani	Senior Lecturer	SPE NAICE conference, Oil Flow Conference	Annual

9	Dr. E. Okafor	Lecturer I	SPE NAICE conference, Oil Flow Conference, Study Leave, Train the Trainers	Sep 2015 – Dec 2015
10	J. Amiebibama	Lecturer I	SPE NAICE conference, Oil Flow Conference	Oct 2012 – Sept 2015
11	S. O. Kwelle	Lecturer I	Study Leave /Ph.D	Jan 2011 - Date
12	U. Osokogwu	Lecturer I	Study Leave /Ph.D	Oct 2014 – Date
13	L. Ikeh	Lecturer II	Study Leave /Ph.D	Jan 2011- Date
14	O. C. Ekeh	Lecturer II	SPE NAICE conference, Oil Flow Conference	Annual
15	P. O. Wachuku	Lecturer II	Study Leave /Ph.D, Train the Trainers.	June 2014 - Dec. 2016
16	J. L. Ichenwo	Lecturer II	SPE NAICE conference, Oil Flow Conference	Annual
17	J. V. Aimikhe	Lecturer II	Scholarship / Ph.D (completed)	Nov, 2016
18	I. I. Azubuike	Lecturer II	Scholarship / Ph.D (completed)	June 2014 - Dec. 2016
19	T. O. Odutola	Lecturer II	Scholarship / Ph.D (completed)	Nov, 2016
20	C. Anyanwu	Lecturer II	SPE NAICE conference, Oil Flow Conference	Annual

Table C.3.2: List of Non - Academic Staff Development Beneficiaries

S/No.	Non – Academic Staff	Category of Staff Development	Duration/Date
1	Mrs. Caroline P. Suwari	Study Leave/ M. Eng	May 2014 – April 2016
2	Ndubuisi Elizabeth	Technical workshop	Sept. 2016
3	Kufre Daniel Akpan	Technical workshop	Oct. 2016
4	Chimele Deborah	Technical workshop	Oct. 2016
5	Loveday Tonwee	Technical workshop	Oct. 2016
6	Amukwo James Bide	Technical workshop	Oct. 2016
7	Samuel Isaiah	Technical workshop	Oct. 2016

SECTION D

D.1.1 Physical Facilities Relevant to the Programme

Table D.1.1: Available Facilities for the Programme

Type of facility	No. Available	Average area of room/studio etc in sq.m	No. of students each room can accommodate
lecture room	5	96	50
Lecture Theatre	3	334	200
Seminar Room	2	40	30
Laboratories	6	35	20
Workshops	1	100	200
Departmental Library	2	54	40
University Library	2	1100	5000
Office Accommodation	20	13	1

D.1.2 Laboratories

The Department has four main laboratories, a Computational (Research) laboratory and shares laboratory facilities with Chemical Engineering Department (Compositional Analysis) and Civil/Environmental Engineering (Fluid Mechanics), as well as Mechanical Engineering (Thermofluids). The laboratories resident in the departmental building are:

1. Reservoir Engineering
2. Production Operations
3. Well Engineering
4. Gas Technology

The laboratories are equipped with university funds, substantial donations from Petroleum Technology Development Fund (PTDF), Education Tax Fund (ETF) and demonstration facilities from various Service Companies, such as Schlumberger, BJ Services, Baroid. The Research Laboratory consists of computers and software for advanced petroleum engineering work. Research software in department include:- PETROCALC 3, 6,7,8; PVT/Reservoir Sim, Saphir Advanced, CSNG Optimum Casing String Design, Z-factor for Windows, etc.

D.1.3 Core Analysis Laboratory

The laboratory was set up to measure rock properties which are required to compute reserve and flow properties of reservoir rocks under varying pressures and temperature. Key properties measured in the laboratory include:

- Porosity
- Permeability
- Fluid Saturations
- Capillary pressure curves

D.1.4 PVT Laboratory

The pressure, volume, Temperature laboratory was set up for the measurement of oil, gas and water properties as functions of pressure, volume, and temperature. These properties provide critical information required for understanding and efficient management of petroleum oil and gas reservoirs.

Key parameters measured and calculated in the laboratory include:

- Bubble point pressure
- Dew point pressure
- Oil formation volume factor
- Gas formation volume factor
- Water formation volume factor
- Solution gas-oil ratio, among others

D.1.5 Drilling Fluids Laboratory

The drilling fluid laboratory was set up to measure the properties of fluids used in drilling oil and gas wells. Information obtained from the laboratory assists the petroleum engineer to design the drilling of each well for optimal technical and economic performance. The key parameters measured in the laboratory include the following:

- Mud density (weight)
- Mud viscosity
- Gel strength
- Plastic viscosity

- Yield value
- Filtration rate
- Sand content
- Hydrogen + ion concentration (PH)
- Resistively
- Salt Contamination
- Calcium contamination

Table D.1.2: List of Laboratory Equipment

S/NO	NAME	USES
1	Gas Permeameter	Measurement of Permeability of consolidated core section
2	Porosimeter	Measurement of Porosity of consolidated core Sample
3	Core Holder for Resistivity meter	Measurement of Resistance to flow of Core Samples in an Electrical Current
4	Variable Viscometer	Measurement of Viscosity of fluids
5	High Pressure, High Tem. Filter Press	Testing Mud at Elevated Temperature and Pressure
6	Retort Kit (Oil and Water)	Solid and Liquid Content Determination
7	Core Dresser/Cutter	Cutting of Cores to the reqd. length and uniform dressing
8	Hot wire cutter	Cutting Wires to length
9	Multi Mixer	For Homogenous Mixing of Drilling Fluids Chemicals
10	Labline (Double Heater)	Heating and the Increasing of Fluid Temperature
11	Permeameter (Liquid)	Measurement of Liquid Permeability
12	Hamilton Beach Mixer	Mixing of Drilling Fluid
13	Fann Viscometer	Viscosity of fluids
14	Filter Press 4 Units	Mud Test
15	PH Meter	Determination of PH of Drilling Fluids
16	Mud Balance	Density of Drilling Fluids
17	Marsh Funnel	Density of Drilling Fluids
18	Sand Content	Measurement Oil Percentage of Sand in Mud
19	Resistivity Meter	For Measurement of Resistance to flow
20	Sand Drill Press	For Core Analysis
21	Stop Watch	Timer
22	Hydrometer	Specific Gravity Determination
23	Sieve Shaker (Motorized)	Sieving Analysis
24	Sieve Shaker (Manual)	Sieving Analysis
25	Oven	Drying
26	Air Compressor	Natural air Generating System
27	Penetrometer	Penetration of Butimenous Material
28	Lab. Distillation Unit (3 DWS-(1)	Practical Distillation of Crude Oil

29	Lab. Centrifuge Model	Centrifugal Strength
30	Hot Plate	Heating
31	Flash Point Equip	To Maintain Temp. of Petroleum Production
32	Pour Point Equip	Cooling Temp. of Petroleum Product
33	Soxhlet Extractor	Extraction Process

Table D.1.3: List of Chemicals for PVT Laboratory/Drilling

S/NO	QTY	DESCRIPTION	UNIT PRICE	AMOUNT
1	5	Bentonite 1 bag 25 kg	4,500.00	22,500.00
2	10	Thermometer 0 to 500 ^{oc}	3,500.00	35,000.00
3	10	Thermometer 25 ^{oc} to 1000 ^{oc}	6,000.00	60,000.00
4	4	Stop clock with alarm	12,000.00	48,000.00
5	6	Stop watch	7,000.00	42,000.00
6	10	Graduated Measuring cylinder 100ml	500.00	5,000.00
7	10	Graduated Measuring cylinder 250ml	1,000.00	10,000.00
8	10	Graduated Measuring cylinder 500ml	1,500.00	15,000.00
9	10	Graduated Measuring cylinder 1000ml	3,500.00	35,000.00
10	10	pH indicator paper (pH 1 – 14)	1,500.00	15,000.00
11	3	Specific gravity bottles 50ml	2,000.00	6,000.00
12	4	Homogenizer Mixer Kenwood	48,000.00	192,000.00
13	2	Analytical Weighing Balance AC/DC (0 to 400gms)	160,000.00	320,000.00
14	5	Sodium Acid Pyrophosphate Solution 1 lit.	4,300.00	21,500.00
15	5	Caustic Soda 500g	2,500.00	12,500.00
16	4	Sodium Bicarbonate 1kg	2,300.00	9,200.00
17	4	Soda Ash 1kg	1,800.00	7,200.00
18	3	Sodium Chloride 1kg	1,600.00	4,800.00
19	4	Lime 1kg	2,000.00	8,000.00
20	5	Calcium Carbonate 1kg	3,000.00	15,000.00
21	20	Phenolphthalein 50gm	2,000.00	40,000.00
22	6	Calcium sulphate 500g	3,500.00	21,000.00
23	5	Barium chloride 500g	2,800.00	14,000.00
24	2	Nitric Acid 2.5 lit conc.	3,500.00	7,000.00
25	4	EDTA Solution 500ml	2,000.00	8,000.00
26	4	Ammonia Buffer Solution	2,500.00	10,000.00
27	5	Potassium Chromate 30% 100mg	2,800.00	14,000.00
28	4	Sodium Carbonate 1kg	2,200.00	8,800.00
29	3	Absolute Ethanol 2.5 lit	3,000.00	9,000.00
30	3	CMC High 25kg	3,500.00	10,500.00
31	3	CMC Low 25kg	3,500.00	10,500.00

32	4	Total Hardness Indicator Tabs 10gm	6,000.00	24,000.00
33	2	Calcium Hardness Tablets 50gm	7,000.00	14,000.00
34	3	Methyl Orange Indicator Sol. 100ml	3,500.00	10,500.00
35	4	Potassium hydroxide Solution 26.87% WW	2,600.00	10,400.00
36	4	Carbon Tetrachloride 2.5 lits	12,000.00	48,000.00
37	2	Toluene 2.5 lit	6,000.00	12,000.00
38	2	Xylene Sulphur Free 2.5 lt	4,000.00	8,000.00
39	3	Sulphuric Acid 2.5 lit conc.	3,500.00	10,500.00
40	3	Sodium Hydroxide 500gm	1,800.00	5,400.00
41	4	Barium Chloride 500g	3,500.00	14,000.00
42	3	Hydrogen Peroxide 2.5 lits	4,000.00	12,000.00
43	2	Ferrous Sulphate 500g	2,500.00	5,000.00
44	12	Whatman Filter paper 12.5cm	1,800.00	21,600.00
45	12	Oil Testing Hydrometer	4,600.00	55,200.00
46	12	Burettes 0 – 50 ml English	3,500.00	42,000.00
47	10	Beakers 250ml x 10	600.00	6,000.00
48	10	Beakers 500ml x 10	800.00	8,000.00
49	10	Beakers 1000ml x 10	1,500.00	15,000.00
50	24	Retort Stand (Complete)	5,000.00	120,000.00
51	24	Bossheads	1,950.00	46,800.00
52	24	Clamps	2,000.00	48,000.00
53	12	Erlenmayer Flask 1/lit	3,800.00	45,600.00
54	12	Conical Flask 500ml	3,000.00	36,000.00
55	5	Condensers	6,000.00	30,000.00
56	2	Silver Nitrate Ample N/10/500ml	9,000.00	18,000.00
				N1,702,500.00

Table D.1.4: List of Principal Tools, Machines, instruments and Equipment Available

S/NO.	NAMES OF EQUIPMENT	FUNCTION
1.	Air Compressor	To Supply Compressed air
2.	Dean Stark Distillation Assembly	
3.	Advanced resistivity System	To determine flow resistance in an electric current
4.	Resistivity Cell	To measure resistance to flow
5.	Centrifugal Retractor W/Still	For separation of samples
6.	Programmable Automatic Rcl Meter	
7.	Core Milling Machine	For cutting of Cores
8.	Diamond Tooled Drill Press	For cutting of Cores
9.	Core Stabbing Sand	To Cut Cores to Sizes
10.	Plastic Coating Melting Pots	For Coating of Core
11.	Soil Moisture Capillary Pressure Apparatus	To Determine Moisture Content
12.	Soil Moisture Cell	To Determine Moisture Content
13.	Manually-Operated Gas Porosimeter	To Determine Porosity of Samples
14.	Manually-Operated Liquid Permeameter	To Determine the Permeability of Samples
15.	Manually-Operated Gas Permeameter	To Determine the Gas
16.	CO ₂ /Toluene Core Cleaner	For Cleaning of Core
17.	Gas Chromatograph	To Detect Hydrocarbons and Gases.
18.	Analog Meter	
19.	Gyroscopic Unit	

D.1.6 Classrooms and Lecture Theatres

The departmental building consists of four classrooms with ceiling fans and air-conditioners, teacher's podium, white teaching boards and other presentation, as well as teaching aids (Overhead projectors, in focus, screens). The department uses common faculty and university classrooms and lecture theatres for some of its lectures, especially large classes.

D.1.7 Clinics/Studios

- I. The General Science and Engineering Workshop
- II. The Engineering Drawing Studio
- III. The University ICTC (Information & Computer Technology Centre, Abuja – 600 Computers)
- IV. Computer Laboratory
- V. College Seminar Hall
- VI. ETF Seminar Hall

Are shared by Petroleum and Gas Department with other Departments

D.2: Office Accommodation

Office accommodation for each lecturer is spacious, well ventilated and provided with fan and air-conditioner. Except for one room that is shared by two lecturers, all lecturers stay single in the offices. The accommodation is adequate and comfortable. It competes favourably with the practice anywhere else in the world. Each staff has his own computer and accessories, table, chairs, cabinet and bookshelf. The office accommodation conforms to NUC guidelines.

Members of staff of Petroleum/Gas Engineering Department are adequately accommodated in their offices. All lecturers occupy single office space with adequate conveniences.

Table D.2.1: Office Accomodation Available for the Programme

Rank	Single Occupancy	Shared by 2	Shared by 3	Shared by 4 or more	Total Offices
Professors	8	nil	nil	nil	8
Associate Professors /Readers	1	nil	nil	nil	1
Senior Lecturers	3	nil	nil	nil	3
Lecturer I	3	nil	nil	nil	3
Lecturer II and below	3	nil	nil	nil	3

SECTION E

E.1 Library Facilities Relevant to the Programme

E.1.1 Physical Library Holding for the Programme

- (i) No. of textbooks: 45,237 Titles
- (ii) No. of academic journals: 4,600
- (iii) No. of other periodicals (e.g. Newsletters, new bulletin, etc) 3,000
- (iv) No. of monograms/offprint: 1,356

E.1.2: e – library

A dedicated air conditioned, Visual Library Centre with 35 seating capacity, fully air conditioned, computers with internet systems is available for the programme at the department of Petroleum and Gas Engineering. Students log in to access the e books and e journals.

E.1.3: Library space (m²)

- (i) For books: 1,435m²
- (ii) For Reading: 3,125m²

E.1.3.1: Seating Capacity for users: More than 1, 500 Readers

- (ii) Others (specify)
 - *Steady Power Supply (diesel generator)*
 - *Electronic Resources Library: (i) knowledge common;(ii) Research common*

SECTION F

F.1

Funding

Table F.1: Recurrent Expenditure for the past three (3) years

Cost Category	Year 2013/2014		Year 2014/2015		Year 2015/2016	
	Provision	Actual Expenditure	Provision	Actual Expenditure	Provision	Actual Expenditure
	N	N	N	N	N	N
1. Staff Salaries	96.3m	96.3m	71.08m	71.08m	97.94m	97.94m
2. Staff Development	-	-	-	-	-	-
3. Library Materials	-	-	-	-	-	-
4. Maintenance of Lab. Equipment	162,000	200,000	-	-	180,000	200,000
5. M/V running cost	135,000	150,000	45,000	80,000	90,000	200,000
6. Maintenance of Office Equipment	180,000	200,000	63,000	160,000	126,000	100,000
7. Diesel for department Gen	-	-	-	-	150,000	120,000
8. Computer Consumables	90,000	100,000	100,000	90,000		120,000
9. Lab & teaching materials	270,000			40,000	200,000	
10. postage & telecom	-	300,000	36,000	-	200,000	160,000
11. Hospitality/official entertainment	-	-	-	-	-	100,000
		-	-	-	300,000	100,000
12. Cleaning & Sanitation	-	-	-	-	45,000	50,000
13. Office furniture & Equipment	-	-	-		1,500,000	600,000
Conf/semi/workshops	-	-	-		600,000	540,000
Transport/travelling	180,000	200,000	100,000	90,000	90,000	100,000
Printing & stationary	90,000	100,000	120,000	108,000	180,000	200,000
Exam. Expenses	-	-	200,000	180,000	500,000	160,000

Table F.2: Capital Expenditure for the past three (3) years

Category	Year2013-2014		Year2014-2015		Year2015-2016	
	Provision	Expenditure	Provision	Expenditure	Provision	Expenditure
1. Expansion to Physical Facilities	13.3m		13.3m		13.3m	
a. Classroom Lecture Theatre						
b. Laboratory / Workshop Studio						
2. Machines and Equipment	9.9m		9.9m		9.9m	
3. Others (specify)	8.6m		8.6m		8.6m	

Remarks: World bank assisted funding,Petroleum Technology Development Fund(PTDF), Nigerian Content Development Management Board(NCDMB), Shell Chair, research grants are other sources of additional funding.

SECTION G

G.1 Employment Index

Table G.1: Employment Index over a 10 – Year Period

Year of Graduation	Percent that is Self - Employed	Percent that Got Jobs within 1 Year	Summary of Employers Remarks
2015	45	15	Successfully Employed
2014	30	40	Adequate Attitude to Work
2013	30	55	Adequate Attitude to Work
2012	20	60	Successfully Employed
2011	23	50	Adequate Attitude to Work
2010	15	45	Successfully Employed
2009	20	50	Successfully Employed
2008	40	25	Adequate Attitude to Work
2007	30	40	Successfully Employed
2006	35	35	Adequate Attitude to Work
2005	25	40	Successfully Employed