The purpose of this brochure is to provide general information for the guidance of PhD students who may wish to undertake training and research at the World Bank African Centre of Excellence for Oilfield Chemicals & Research (ACE-CEFOR), University of Port Harcourt. The brochure and the contents are subject to changes from time to time. The Institute's Academic Board reserves the right to modify or cancel any statement in the brochure and accepts no responsibility for any consequence(s) arising therefrom.

THIRD EDITION
APRIL, 2019
Oil well drilling, well completion and production enhancement require the use of several chemicals known as oilfield chemicals. Most of the chemicals currently being used in Nigeria and other African countries where oil has been discovered and produced are imported. However, the raw materials for these chemicals are available locally in large quantities and could be sourced and processed for use in oilfield operations. The lack of research in this area has robbed these nations of enormous opportunities to create jobs, generate new knowledge and develop skills. The aspiration of the Federal Government of Nigeria is to increase indigenous participation in the oil and gas industry, build local capacity, create linkages to other sectors of the national economy and thereby boost industry contributions to the growth of our National Gross Domestic Product. One of the ways of actualizing this aspiration is to encourage and fund in-country raw materials by our universities. This will be a win-win for the Universities, the oil industry and the Country. Collaborative research efforts among African Universities will enhance capacity building, provide platform for quality training and regional applied research networks to address regional challenges and promote specialization.
The University of Port Harcourt through her strategic research plan and as a leading Centre of Excellence in petroleum Studies, has a cream of experts with industry experience to address this need of in-country oilfield chemicals research and development. As a result of this comparative advantage, our University is among the 22 beneficiary Universities of the World Bank grant to establish Africa Centres of Excellence with a focus on Oilfield Chemicals Research.

Professor Ogbonna F. Joel

Centre Leader, World Bank Africa Centre of Excellence in Oil field Chemicals Research.
The following Institutes / Centres/faculties are currently in collaboration with the World Bank Africa Centre of Excellence (ACE) for Oilfield and Chemical Research and offer the following programmes

1. **Institute of Petroleum Studies (IPS)**
   M.Sc. Petroleum Engineering and Project Development

2. **Centre for Occupational Health, Safety & Environment**
   M.Sc. Occupational Health and Safety
   M.Sc. Environmental Technology and Management PhD in Occupational Health and Safety
   PhD in Environmental Management and Technology

3. **Centre for Geosciences (COG)**
   M.Sc. Petroleum Geosciences PhD in Geological Studies

4. **Emerald Energy Institute (EEI)** M.Sc
   Petroleum Economics M.Sc Energy Economics
   Ph.D. in Petroleum Economics Ph.D. in Energy Economics

5. **Centre for Gas, Refining & Petrochemicals (CFGRP)** M.Sc. in Petroleum Refining & Petrochemical Engineering.

6. **Offshore Technology Institute (OTI)**
   M. Sc Pipeline Engineering
   M. Sc Offshore Technology
   M. Sc Subsea Engineering

7. **Institute of Natural Resources, Environment and Sustainable Development (INRES)**
   M. Sc Natural Resources and Environmental Management
   PhD Natural Resources and Environmental Management

8. Faculties of Engineering and Science in relevant PhD programmes
We have more than fifty experts from University of Port Harcourt, other Nigerian and Regional Universities as well as from the industry and who are involved in supervision and teaching.
Introduction:
The World Bank Centre of Excellence for Oilfield Chemicals Research (ACE-CEFOR) University of Port-Harcourt is established to offer international graduate programmes for sustainable development in the petroleum industry. The Centre won a multi-million dollars grant from World Bank to establish an Africa Centre of Excellence in Oil Field Chemicals Research to address regional development challenges in the oil and gas industry. The Centre is well positioned to deliver professional and high quality services to the Oil and Gas industry through capacity building and cutting edge research.

PhD PROGRAMME IN PETROLEUM STUDIES AND RELATED DISCIPLINES
The objective of this programme is to commit intelligent and talented young men and women within the African region to solving the diverse problems in the oil and gas industry particularly in the areas of Oil Field Chemicals/Biofuels, Petroleum and Environmental Studies. The degree will be awarded to candidates that demonstrate scholarship and ability to carry out independent research investigation.

Admission Requirements
1. Students that have successfully completed the relevant M. Sc degree of the University of Port Harcourt with a minimum CGPA of 4.0 as well as minimum of CGPA of 3.0 in their first degree
2. Candidates with equivalent qualifications from other Universities.
3. Qualified industry staff with relevant M. Sc degree can apply.
4. Shortlisted candidates will be invited for interview/presentation of research proposals. Limited sponsorship opportunity is available for students, however, candidates are encouraged to seek for sponsorship from other sponsoring agencies and employers.
Duration of Programme
Expected to graduate within a period of 24 to 36 calendar months of intensive modular taught courses and research project.

SCHEDULE FOR THE Ph.D PROGRAMME
WEEKS( 1-24)
- Registration/Orientation of students
- Identify research interest/topic
- Assign Supervisors
- Undertake compulsory Nigeria University Commission/ Centre stipulated Courses
- This will be on modular basis of 40hrs per week
- Extensive Literature review
- Develop project road map/time-line
- Regular contact with supervisors on progress
- 1st Presentation - Proposal defense(literature review, objectives/ research methodology/etc)

WEEKS (25 – 36)
- Take remaining departmental courses
- Identify equipment, software and laboratories needed for research execution
- Estimate costs associated with project
- Experiment set-up
- Commence data/sample collection
- Regular contact with supervisors on progress
- Candidates may be required to take departmental based courses/ advised to audit some courses depending on perceived knowledge gap by the supervisors
WEEKS (37-48)
- Continue with lab work/project execution
- Regular contact with supervisors on progress
- 2\textsuperscript{nd} Presentation on Research progress.

WEEKS (49-60)
- Continue on lab work/project execution
- Regular contact with supervisors on progress
- Align with road-map and ensure progress is on track
- Identify patenting potentials of project, liaise with Centre Leader and IPPO for documentation and necessary actions
- Publish 1\textsuperscript{st} paper in any of the approved journals

WEEKS (61-72)
- Continue on lab work/project execution
- Regular contact with supervisors on progress
- Develop models if applicable
- Review progress in line with road-map and objectives
- Regular contact/presentation to supervisors

WEEKS (73-84)
- Continue on lab work/project execution
- Result analysis
- Validation of experimental results with developed models
- Regular contact with supervisor on progress
- Follow-up and fine-tune on patenting documentation
- Publish 2\textsuperscript{nd} paper in approved journals

WEEKS (85-96)
- Validation of models with experimental results and existing models
- Tidy loose ends
- Regular contact with supervisor on progress
- Prepare report to capture all inputs during previous presentations
- Finalize documentation for patenting if any
- Make final presentation(3\textsuperscript{rd}) to the Centre
WEEKS (97- ?)
- Effect corrections and make report ready for School of Graduate Studies
- Submit report to IPPO for plagiarism check
- **Make presentation to School of graduate Studies**
- Effect corrections after presentation in graduate school
- Schedule for external examiner/Final defense

**REMARKS:** This schedule is for candidates who meet the minimum period of 24 calendar months. Others who fail to meet this minimum target are expected to complete within a period of 36 months.

**TUITION FEES**
Tuition fees for three years should be:
- N750,000 per annum for self sponsored nationals
- $15,000 for Self sponsored non-nationals
- N1,500,000 for sponsored nationals
- $25,000 for sponsored non-nationals
- The Tuition fee will be paid by the University for students sponsored by the ACE.

**ACCEPTANCE FEE:**
- Non-refundable acceptance fee of N100, 000 per candidate for Nationals and $1000 for non-Nationals.

**Academic Programme**
- This programme will consist of the following:
  - Extensive research leading to publications in reputable international and local journals
  - Participation in seminars, workshops and conferences
  - Taught courses comprising NUC compulsory courses, and specialized departmental courses as applicable.

The courses will be taught in modular basis. We expect the candidates to pass all the courses as part of their continuation requirement.
**Research Focus**

- Petroleum Engineering
- Gas Engineering and utilization
- Petroleum Economics
- Chemical Engineering
- Geological Studies
- Oil Field Chemicals
- Biofuels/Biotechnology
- Environmental Studies

**Selection of Supervisors**

- Supervisors will be drawn locally, internationally, and from the industry.
- Every student must be assigned to at least two supervisors.
COURSES AND COURSE CONTENTS
ACE 901 – Research Methods and Commercialization (3 Credits)

Course Content
- Principles of Scientific Research and Reporting
- Research as an Enterprise/Multidisciplinary Approach (Entrepreneurship, Commercialization)
- Advanced Statistics
- Proposal Writing and Presentation Skills
- Anti-plagiarism and Patenting

ACE 902 – Oilfield Science & Technology (3 Credits)

Course Content.
- Overview of Oilfield Biology
- Overview of Oilfield Chemistry
- Overview of Oilfield Technology (Exploration, Drilling, Cementing, Production and Processing)
- Environmental Impact of Oilfield Chemicals

ACE 903 – First Departmental Taught Course (3 Credits)
As applicable from respective Departments/Centres
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<td>ACE906</td>
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MEMORANDUM OF UNDERSTANDING
Academic Supervision for Registered Research Students

(* Adapted with permission from the Institute of Engineering, Technology and Innovation Management, University of Port Harcourt)
**Preamble**
Every candidate registered for a research degree at ACE-CEFOR, University of Port Harcourt is required to complete and submit this Memorandum of Understanding, which entails interalia:

- Contact information of both candidate and supervisor(s)
- Candidate's expectation of the supervision
- Supervisor(s) expectation of the research and from the candidate
- Intellectual Property issues
- Plagiarism policy agreement (to be attached to every written submission)
- Declaration of originality

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<td>Contact telephone number(s)</td>
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<table>
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<th>Name of Supervisor</th>
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<td>Email Address</td>
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<td>Work Address</td>
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</table>
Name of cosupervisor (where applicable) 

Email address 

Work address 

Candidate’s Expectations

- Supervisor(s) to be easily accessible.
- Clear mediation mechanisms (in accordance with University Regulations) to deal with any issues that may arise between the candidates and supervisor(s).
- Candidate to receive appropriate feedback (preferably in written format) within a reasonable time (to be agreed upfront at time of submission) from all submissions to the supervisor(s).
- Other special expectations of the candidate
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- Candidate’s plans and commitments: The candidate should indicate any matter(s) that may have an impact on the timetable proposed for the research study
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• Comments by supervisor(s) on Candidate's expectations

Candidate undertaking

**Supervisor(s) Expectations**

- Candidate to be acquainted with University policies on Research Ethics, Plagiarism and Intellectual Property.
- Regular scheduled meetings (at least once in every three months) punctually attended by the candidate. Meetings to be scheduled in advance by the candidate.
- Candidate to make email contact with supervisor(s) at least once a month.
- Candidate to provide a research project timetable, which conforms to the minimum time period allowable for the degree study at the University. The University Regulations regarding the renewal of registration per degree will apply.
- Candidate to be conversant with and apply guidelines and templates for preparing a research proposal, for conducting research, for producing research reports and publishable articles, and for making presentations.
- Quarterly written progress reports from the candidate with revisions and updates of the timetable.
- Candidate to ensure that all submitted work is written in an acceptable standard of English language. It is not the supervisor(s) responsibility to edit grammar and spelling. Any revisions suggested by supervisor(s) may be re-submitted within the time period stipulated.
- Candidate to attend to any prerequisite modules, courses, workshop, seminar, or conference as may be recommended by supervisor(s).
- Candidate has to demonstrate research competence in order to be recommended for the award of a degree.

• Other special expectations of the supervisor(s)
• Comments by candidate on Supervisor(s) expectations

• Supervisor(s) commitment

Intellectual Property Issues (Refer to applicable University Policy)
Authorship of research outputs should be discussed and agreed upon by all parties concerned. In the case where a candidate is not sponsored by another employer and the research is not specifically supported by another organization, the research output must be published under the name of the University.

Administration (write Y to indicate 'yes' and agreement)

☐ Candidate is familiar with University's Code of Research Ethics and agrees to abide by it.

☐ Candidate is conversant with the University’s Plagiarism Policy and agrees to abide by it.

☐ Candidate is aware of the University's regulations pertaining to postgraduate matters as well as general regulations applicable to all students and agrees to abide by them.

☐ Candidate is familiar with University's Intellectual Property Policy and agrees to abide by it.

☐ Other specific regulations
**Termination**

Should a candidate fail to maintain satisfactory academic progress during the period of study, the supervisor(s) may, after consultation with the candidate, formally write to warn the candidate regarding the seriousness of the matter and stating the probationary conditions to achieve satisfactory progress. Should the candidate fail to rectify the situation for a period of three months following, then the supervisor(s) may recommend that the candidate be de-registered from the programme.

A candidate may appeal against such a recommendation in writing citing reasons and providing assurances of progress. The candidate's appeal, together with a written response from the supervisor(s) shall be considered by an Appeals Committee, duly set up in accordance with University Regulations. The Appeals Committee decision is final.

**Candidate's comment and signature**

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**Centre Director:** I have reviewed this completed Memorandum of Understanding as it reflects the roles and responsibilities of the candidate

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Plagiarism Policy Agreement
The University places great emphasis upon integrity and ethical conduct in the preparation of all written work submitted for academic evaluation. Both the candidate and supervisor(s) have a responsibility to avoid plagiarism. One is guilty of plagiarism when copying from another author's work without acknowledging the source and passing it off as own effort. This 'stealing' also applies when someone else's work is submitted slightly altered in a manner that retains much of the effort of the original author.

Candidates who commit plagiarism will not receive any credits for the plagiarised submission. Where there is evidence, the matter may be subject to a Disciplinary ruling, which can result in expulsion from the University for anyone found guilty of plagiarism.

The declaration which follows must accompany all written work submitted by the candidate. No written work will be accepted for assessment unless it is prefaced with the declaration.

Declaration:
I hereby confirm that the attached submission is my own work and I am familiar with the University policy on plagiarism. Where other peoples work has been used, this has been acknowledged and referenced in my report. I have not used work previously produced by any person to hand in as my own. I have not allowed, and will not allow anyone to copy my work with the intention of gaining academic credit. I understand that this submission contributes to the assessment of my competency for the research and I accept the assessment made.
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<td><strong>Supervisor signature(s)</strong></td>
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<td><strong>Supervisor(s) comments</strong></td>
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Ph.D. Research Supervisors should address the following criteria:

a) The candidate's capacity to perform critical analysis and demonstrate original thought in all aspects of the study.

b) Candidate's ability to carry out comprehensive and detailed review and critique of literature, views and persuasions relevant to the field of study.

c) Candidate's capacity to apply appropriate research methodologies. Testing of hypothesis is crucial.

d) Extent to which the research demonstrates a significant original contribution to knowledge through theory building, the application and/or the testing of theory.

e) Preparation and presentation of articles, reports and the thesis, including:
   - Clarity of expression,
   - Accuracy and appropriateness of presentation of results,
   - Quality and relevance of illustrative material (such as graphs, tables, illustrations)
   - Relevance and accuracy of citations, references, etc., and
   - Development of relevant and coherent arguments.

f) Quality of artifacts, if any, including:
   - Conceptual understanding of the relevant field,
   - Ideas and/or imagination demonstrated,
   - Technical competence,
   - Resolution of the artifacts,
   - Complexity and difficulty demonstrated.

g) Worthiness of the research for publication in any appropriate form