Europe and International Department

# EVALUATION AND ACCREDITATION DOCUMENTS

## M.Eng. Petroleum and Gas Engineering

Centre for Oilfield Chemical Research
University of Port-Harcourt, Port-Harcourt,

Nigeria

**September 2019**

Rapport publié le 21/11/2019

Haut Conseil de l'évaluation de la recherche et de l'enseignement supérieur

# CONTENTS

International evaluation and accreditation

# EVALUATION REPORT

M.Eng. Petroleum and Gas Engineering

Centre for Oilfield Chemical Research
University of Port-Harcourt, Port-Harcourt, Nigeria

**MAY 2019**

The Africa Center of Excellence in Oilfield Chemical Research (ACE-CEFOR) of the University of Port-Harcourt has mandated the Hcéres to perform the evaluation of its Petroleum and Gaz Engineering master programme. The evaluation is based on the "External Evaluation Standards" of foreign study programmes, adopted by the Hcéres Board on October 4th, 2016. These standards are available on the Hcéres website (hceres.fr).

**For the Hcéres[1] :**

Michel Cosnard, President

**On behalf of the experts committee[2] :**

Pierre Haldenwand, President of the committee

In accordance with the decree n°2014-1365, November 14th, 2014,

[1] The president of Hcéres "contresigne les rapports d'évaluation établis par les comités d'experts et signés par leur président." (Article 8, alinéa 5) — "countersigns the assessment reports made by the experts' committees and signed by their president" (article 8, alinea 5).

[2] The evaluation reports "sont signés par le président du comité". (Article 11, alinéa 2) — "are signed by the president of the committee" (article 11, alinea 2).

# CONTENTS

# I. STUDY PROGRAMME IDENTITY SHEET

University/institution: **University of Port-Harcourt (UniPort)**
Component, faculty or department concerned: **Department of Petroleum and Gas Engineering**
**Africa Center of Excellence in Oilfield Chemical Research (ACE-CEFOR**)
Programme's title: **Master of Engineering Degree in Petroleum and Gas Engineering**
Training/speciality: different specializations are proposed:

- Reservoir Engineering
- Gas Engineering
- Drilling Engineering
- Production Engineering
- Petroleum Economics

**Year of creation and context:**
The University of Port Harcourt has been founded by the federal government in 1975 as a college of the University of Lagos. It gained the University status in 1977. The faculty of engineering started in 1979 and Petroleum engineering was one of the first proposed programmes. It has been upgraded to Petroleum and Gas Engineering Department in 1999, in order to teach and conduct research in these fields. The ACE-CEFOR has been established in 2014, as a Center of Excellence in Petroleum Engineering granted by the World Bank.

**Site(s) where the programme is taught (Town and campus): Port-Harcourt**
**Programme director:**
**Surname, first name: Professor Ogbonna F. JOEL, Center (CEFOR) director**
**Profession and grade: PhD Chemical/Petro-Chemical Engineering (2003, UST)**
**Main subject taught: Drilling and Environmental Engineering**

## METHODS AND RESULTS OF THE PREVIOUS ACCREDITATION(S)

The National Universities Commission (NUC) conducts the accreditation process for the study programme every 5 years (last one in 2017). The Council for the Regulation of Engineering in Nigerian (COREN) conducts accreditation every 3 years. The study programme has also received members of the ABET[1] accreditation committee for the purpose of conducting Gap analysis.

In order to ensure the program quality maintenance and enhancement, a constituted Graduate Board ensures that the program quality is sustained and improved.

## HUMAN AND MATERIAL RESOURCES DEDICATED TO THE PROGRAMME

### 1. Human resources

The average teaching staff is announced to be in a range of 18 to 24[2] faculty members devoting between 40 and 60% of time to the program. They distribute their activity between 40% in teaching in different programs for the professors till 60% for the lecturers, the remaining time being focused on research and programme management. This large number of teachers allows each course to be given by a specialist in the discipline.18 technical staff and 17 administrative staff support teaching staff and students.

### 2. Material resources

The Department has four inner main laboratories, a Computational (Research) laboratory and shared laboratory facilities with the institute of petroleum studies (IPS), Chemical Engineering Department (Compositional Analysis) and Civil/Environmental Engineering (Fluid Mechanics), Mechanical Engineering (Thermofluids), as well as other collaborating industry partner laboratories. The laboratories resident in the departmental building are Reservoir Engineering, Production Operations, Well Engineering, 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

[1] ABET is an international nonprofit, non-governmental agency that accredits programs in applied and natural science, computing, engineering and engineering technology. It provides assurance that a college or university program meets the quality standards of the profession for which that program prepares graduates.

[2] Depending on the document (SSR (Self-Study Report) or Handbook)

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.

### STUDENT POPULATION: EVOLUTION AND TYPOLOGY OVER THE LAST 4 YEARS

| YEAR | ENROLLEMENT | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | FULL TIME | | PART TIME | | NATIONALITIES | | |
| | Male | Female | Male | Female | Nigerian | Non - Nigerians | |
| **2017/2018** | 40 | 15 | 2 | 1 | 58 | --- | 58 |
| **2016/2017** | 33 | 8 | --- | --- | 41 | --- | 41 |
| **2015/2016** | 38 | 5 | ---- | 2 | 45 | --- | 45 |
| **2014/2015** | 30 | 9 | 3 | --- | 42 | --- | 42 |
| **2013/2014** | 35 | 6 | --- | --- | 41 | --- | 41 |

# II. ON-SITE VISIT DESCRIPTION

## COMPOSITION OF THE EXPERTS PANEL

**President:**
Pierre HALDENWANG, Emeritus Professor at Aix-Marseille Université (Spéciality : physics, mechanical engineering.

**Expert members :**

1. Catherine XUEREB, Research Director CNRS, (Spéciality : Chemical engineering), laboratoire de génie chimique, Institut National Polytechnique de Toulouse.

2. Thibaud LECOMPTE, Assistant Professor, Bretagne Sud University, « habilité à diriger des recherches » (capacity to supervise PhD research) (Spécialities : Material mechanic, biosource materials, civil engineering).

3. Anass NAGIH, Professor, Lorraine University (Spéciality : computer sciences).

4. Valentin LE BOEUF, PhD Student. Ecole Normale Supérieure Paris Saclay. (Spéciality : electrical engineering).

The Hcéres institution was represented by: Pr. Pierre COURTELLEMONT, Science Advisor.

## ON-SITE VISIT DESCRIPTION

- Date of the visit: May the 23rd, 2019.

- Organization of the visit: the visit was made the 23rd of May, on the NUC site, during one day. On-site meetings with the management team, academic staff, closed meetings by videoconferencing with

partners, alumni and students.

- Cooperation of study programme and institution to be accredited: perfect cooperation by all stakeholders, with the support of NUC team (special thanks to Obi, Onyinye and Mickael!)

- People met:
Joel Ogbonna, Centre leader
Ubani C E, Head of Department
V J Aimikhe, Assistant Director
Amiebibama Joseph, Assistant Director,
Oriji A B, Assistant Director

Teachers by videoconferencing:
Franklin O Chukwuna, Dean
Anthonia A Okenenguro,
Gideon O Abu,
Francis Fusier,
Joseph A Ajienka,
Obiajulu C Ekeh
Wachuku Prince
Ubong Ikpaisong
Lessor ikeh
Ani Goodness O
Dulu Appah,
Odutola Toyin
Eneka Okafor
Ijeonma Irene
John Lander Ichenwo
Boma S Kinigoma
Uche Osokogwu

Partners and alumni by videoconferencing:
Grace C Akujobi Emetuche (NPSC PHAREA)
Ojirika Eduwin C
Osihro Christopher (POCEMA)
Christian Isaac (TOTAL)

Students by videoconferencing:
Onyemaechi Victor C, Eyankware Oghenegare E, Aguru Sampson T, Ejiogu Ndubuisi Robert, Inokone Sunday
Okoye Amara U, Okwonna Obumnene Onyeka, Otangri Inemugha, Anyamoru Brillance Onyimyechi, Ndubuisi Elisabeth C (Technologist II), Nwosi-Anele Adaobi Stephenie, Adali Francis Eromosole, Dike Humphrey W, Anaece John Vitus, Odoi Noble Ukela, Elechi Virtue Urenwo, Obuebite Amalate Ann Jonathan, Eme Charles, Ojirika Edwin Chibozie, Kwasi Opoku Boadu, Akaho Augustine Azabaze, James M Muwyithya, Samuel S Mofunlewi, Kamayou Monkam E Vianney, Dumka Esaznwi, Kouadio Koffi Eugene, Botwe Takyi, Amadou Hassane, Ikeonyie Kelechi, Dike Precious E

Staff:
Uwajingba Ebineppre C, Assistant Chief Tech
Fulalo Lucky Donatus, senior technologist
Suwari Caroline P, senior technologist
Amukwo James Bide, senior technologist
Ojikpo Felix, technologist II
Samuel Isaiah, technologist II
China Kelvin Esor, technologist I
Ovwromoh Blessing C, Technologist II
Akpan Kufre Daniel, laboratory Assistant
Loveday Tonwee, laboratory Assistant
Didia Chisa Sandra, laboratory Assistant
Epuzoaju Petronilla Lfeoma
Nwauzi Evelyn N, Higher executive Officer
Akiene Sarah Clement, Higher executive Officer
Ihuoma Amadi, Higher executive Officer

Owhanda Blessing D, Higher executive Officer
Patience Ebulu, Caretaker
Ashara Leticia, Caretaker/cleaner
Onisunil Priscilla
Love Woko, Caretaker
Deborah Clinton Chimele, laboratory Assistant

- Any problems: no
- Other: nothing.

# III. PRESENTATION OF THE STUDY PROGRAMME

## 1 – PRESENTATION OF THE STUDY PROGRAMME

The University of Port-Harcourt is a multi-disciplinary university, covering social sciences, humanities, agriculture sciences, health sciences, education sciences, sciences and engineering. The **Master in Petroleum and Gas Engineering** is attached to the department of petroleum and gas engineering, also offering Post Graduate Diploma Programme (one-year diploma) and PhD Programme.

This Master in Petroleum and Gas Engineering is designed to graduate engineers devoted to the development, recovery and processing of oil and gas. For this, they must be able to apply basic sciences of physics, chemistry, mathematics and geology, and all the Engineering sciences.

It is structured into full-time 1-year courses divided into 3 terms. Part-time is also possible, the program being then arranged over a longer period.

This programme is dedicated to candidates having a good bachelor's degree or an acceptable postgraduate diploma (PGD) in Petroleum Engineering with a mimimum of 3.0 (3.5 for PGD holders) obtained from a recognized university. To be admitted, 30 semester hours of Mathematics and Basic sciences courses and 45 semester hours of engineering topics during the student's undergraduate course work are required[1].

In order to evaluate the program, Hcéres asked the institution to provide a self-assessment report. In fact, the document supplied is a factual document presenting the training programme, without any real self-assessment work. Self-assessment process consists of an internal analysis supposed to lead the institution to bring to light the Strengths, Weaknesses, Opportunities and Threats (SWOT analysis) of the study programme. The document provided is essentially composed of elements previously written for other purposes (Handbook, brochures, website ...).

## 2 - PRESENTATION OF THE PROGRAMME'S SELF-EVALUATION APPROACH

The National Universities Commission (NUC) conducts accreditation exercises for the study programme every five years, and the Council for the Regulation of Engineering in Nigerian (COREN), every three years . The study programme has also received members of the ABET accreditation committee for the purpose of conducting Gap analysis.

In order to evaluate the program, Hcéres asked the institution to provide a self-assessment report. In fact, the document supplied is a factual document presenting the training programme, without any real self-assessment work. Self-assessment process consists of an internal analysis supposed to lead the institution to bring to light the Strengths, Weaknesses, Opportunities and Threats (SWOT analysis) of the study programme. This document provided is essentially composed of elements previously written for other purposes (Handbook, brochures, website ...).

[1] Handbook for graduate degree programmes

# IV. EVALUATION REPORT

## 1- AIMS OF THE STUDY PROGRAMME

The program proposes a coherent content in adequacy with the national needs in engineers in the different fields of petroleum and gas economy. Nevertheless, the communication towards the candidates needs to be enhanced, especially for better differentiating the objectives of the different graduations proposed by the CEFOR.

Through the Master programme in Petroleum and Gas Engineering, UniPort intends to prepare engineers for petroleum and gas industry or research able to solve problems with due consideration to economic factors. "The petroleum and gas engineer must be thoroughly familiar with the basic economic relationships which involve investment, operating expenses, taxation and profitability analysis. 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 supervise 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:

- Controlling and efficiently using the natural energy in an underground reservoir
- Providing additional energy by injecting fluids into the reservoir;
- Increasing the flow capacity of the reservoir or the petroleum in it through sound engineering techniques;
- Reducing the cost of oil and gas recovery, production and transportation, and
- Minimizing waste and protecting the environment"[1]

This study program consists in training and graduating engineers. It is clearly not displayed as a standard master's degree in Science. Yet, the majority of students wish to continue their studies with a PhD, and they evidently do so. In addition to this master's degree, CEFOR offers a Master of Science Degree (M.Sc. in Petroleum and Project Development), which leads mainly to careers in industry. Although it is appreciable that students have an open choice following their master's degree, this situation is somewhat paradoxical with respect to both master's degrees and would deserve better information and communication towards the candidates.

The name of the study programme (Master in Petroleum and Gas Engineering) is clear with regard to its objectives and content, and can be understood by all stakeholders. Unfortunately, Programme Educational Objectives (PEOs) and Students Outcomes (SOs) cover all the diplomas proposed by the department without any differentiation on the actual objectives of the diplomas.

PEOs are the following[2]:
Graduates of Petroleum & Gas Engineering should:

- Be employable and able to practice Petroleum Engineering as qualified engineers, who are ready to solve industry problems to enhance hydrocarbon exploration and exploitation as well as provide requisite skills to boost service operations in the oil and gas industry.
- Be able to pursue lifelong learning and demonstrate successful career growth in Petroleum Engineering through post graduate education and active participation in professional activities.
- Have potentials to become entrepreneurs, who are critical and independent thinkers, exhibiting good leadership skills and playing vital roles that contribute to the welfare of society and the environment.

SOs are as follows:

- An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

[1] SSR
[2] Handbook for graduate degree programmes

- An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.
- An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

The objectives of the study programme with regards to knowledge and skills to be acquired are defined and communicated to students and other stakeholders, especially through the Handbook for graduate degree programmes of the Department of Petroleum and Gas Engineering. Nevertheless, it is difficult for a student to be able to choose a specific programme from a so general PEO. The skills expected in a specific way for each degree (level and specialty) should be clearly specified. Similarly, future professional fields of application could be more precisely described, in particular fed by the feedback from previous graduates.

## 2 – POSITION OF THE STUDY PROGRAM

National leader in the field, enjoying a rich and buoyant environment from both university and business point of views. The program is at the convergence of academic and industrial objectives.

In the field of oil and petroleum engineering education, UniPort graduated over 80% of Masters and PhDs in Nigeria[1]. Unfortunately, other challengers in this area of training are not identified in the documents provided. The University proposes a lot of specializations in this field: Drilling/Well, Petrophysics, Reservoir, Production, Gas Engineering, Petroleum Economics, HSE, Digital Oilfield.

To be admitted into the M. Eng Degree program 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. Furthermore, to be admitted, the students must have at least 30 Semester hours of Mathematics and Basic Science courses and at least 45 semester hours of engineering topics during the student's undergraduate course work. The transcripts of all intending students are hence to be checked to ensure that they passed the basic Mathematics, Basic Science and Engineering courses before being considered for admission[2].

The link between the study programme and research is essentially ensured by the academic staff, also involved in research projects through the PhD students and industrial projects, essentially applied. Different laboratories, offered to PhD students, are also open to Master students in function of the different courses. But laboratory and practice hours are only 3 hours per week during the first semester of the first year. Moreover, to be graduated, candidates have to 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[3].

International collaborations with some African countries are mentionned in the programme, but especially at the PhD level. Lecturers from foreign institutions (USA, South Africa, France) are regularly involved in teaching and research in the programme[4].

There is no particular period dedicated to a foreign stay for the students, despite of their high motivation for acquiring such an experience.

Some professorial chairs at the level of the engineering faculty have to be pointed out: PTDF Chair in Gas Engineering, Shell/Aret Adams Chair of Petroleum Engineering, Emmanuel Egbogah Chair of Petroleum Engineering, Chi Ikoku Chair of Petroleum Engineering, Chirota & Emmanuel Egbogah Distinguished Professor of Petroleum Economics, Policy & Strategy, NCDMB Chair in Oilfield Chemicals Research, TOTAL Chair in Petroleum Engineering. Students can benefit from these visible partnerships[5].

Moreover, the department of Petroleum and Gas Engineering is in collaboration with the following industrial partners, government organizations or international institutions[6]:

[1] ppt presentation
[2] web site
[3] Handbook
[4] SSR
[5] ppt presentation
[6] SSR

- Shell Petroleum Development Company (SPDC)
- TOTAL E&P Nigeria Limited
- LASER Engineering and Consultants, Nigeria Limited.
- POCEMA Nigeria Limited
- Petroleum Technology Development Fund (PTDF)
- Nigerian Content Development and Monitoring Board (NCDMB)
- IFP School, France
- University of Mines and Technology (UMAT), Ghana.

## 3 – STUDY PROGRAMME TEACHING STRUCTURE

A rich choice of specialties, but basics seemingly need to be strengthen and a more progressive specialization should be offered.

The 3-terms full time study is presented in the Handbook. The study programme includes a set of teaching units that is consistent with the objectives defined above. The duration of each course is given. On the other side, there is a lack of precisions on the scope of the student workload expected and the description of the teaching method and evaluation for each course.

Depending of their background in petroleum engineering, students are divided into two categories, a special program reinforced in basics petroleum engineering being attributed in case of deficit. It consists in 9 additional hours per week during the first semester and a supplement of 6 hours a week during the second semester. The courses depend on the specialty and some elective courses are proposed in the third term. For students having a professional activity elsewhere, part-time is proposed with an adapted schedule, leading to a longer duration. Since the majority of students is in practice dedicated to continue their studies with a PhD, the fundamental subjects should be reinforced (applied mathematics, modeling, etc.) during the first two terms. Moreover, the specialization is seemingly premature, since the common scientifc core does not appear as already aquired. A common cultural basement should however be essential for conducting an aware choice.

Students benefit from different laboratories, often shared with other programmes[1]. These practical facilities are well-equipped, owing to the financial support of UniPort and substantial donations from Petroleum Technology Development Fund and Education Tax Fund. Research software are those encountered in industry. They are totally adapted to advanced petroleum engineering work (among them: PETROCALC 3, 6, 7, 8; PVT Reservoir Sim…). Various demonstration facilities are provided by different partner service companies, such as Schlumberger. This strong tools similarity between the program and the industrial world helps the student to be closer to the employment requirements.

In order to be aware of the contemporary business environment and to develop knowledge and understanding of practical work, the programme in all specialties includes a course in Management and Entrepreneurship, which is particularly valuable at this level of engineering training. During the programme, a research project and a design project are assigned to the students, the defense of which is expected faced to an external examiner. Moreover, before graduation, students have to undergo a minimum one-month internship project with relevant companies or industries. This internship seems insufficient as a professional experience for future engineers, and deserves to be extended to at least 3 months.

Teaching methods are essentially classical, with lectures, exercises (sometimes computer-based or with specific softwares) and personal work: literature survey and homework. Different steps enable students to experiment reporting, oral presentation and sometimes how to work in team. Every student is attached to two faculties for academic monitoring, counseling and mentorship.

Student support can be provided by the programme coordinator, course advisers and relevant scholarship bodies like the World Bank programme, the Petroleum Technology Development Fund, Niger Delta Development Commission, Nigerian Content and Development Monitoring Board and other individual and corporate entities[2]. This allows the students to devote themselves completely to the success of their studies.

[1] SSR
[2] SSR

## 3 – PROGRAM MANAGEMENT

A steering of the training is correctly carried out, but a lack of dedicated tools for systematic follow-up of the students, in particular concerning their professional insertion.

The study programme is implemented by a formally identified teaching team, composed of 18 faculties in UniPort (all PhD from UniPort or foreign (UK, USA) Universities), which is consistent for teaching about 40-50 Master students. The teaching team is also partly involved in the other grades delivered by the department (bachelor, M. Sc. Petroleum and Project Development…). They can benefit from some foreign professors, especially the ones from IFP (Institut Français du Pétrole) regularly coming for teaching in the M. Sc. Petroleum and Project Development.

In order to ensure the program quality maintenance and enhancement, and also monitor the students outcomes, a Graduate Board is mandated. It is composed of Professors and Lecturers with PhDs, 2 graduates of the program (currently practicing in SHELL and TOTAL), a member of the university administration, and 2 employers of graduates.

The task of this board[1] is to:
-Assessing the students' project work
-Ensuring quality during students' internships
-Monitoring the performance of teachers in Lecture classes /laboratories.
-Evaluating the quality of questions and their solutions to ensure that minimum standards are met.
-Periodically evaluating lecture materials to ensure that course content is adequately covered.
-Ensuring that lecturers clearly define the course objectives and learning outcomes for each course being taught.
-Establishing a unified assessment /evaluation strategy.
-Ensuring that each lecturer clearly defines his/her evaluation/ assessment method(s) in the lecture notes at the onset of every course lecture.
-Providing adequate information and assistance for students' internships.

Students benefit from the numerous facilities of the recent CEFOR Building Complex, and from different research, analysis and characterization laboratories (see upwards).

Students' performances are evaluated and monitored by an overall assessment. This involves a minimum of 70% attendance to lecture/tutorial (L) and/or laboratory/Practice(P); Continuously assessed through assignments and test; A grade of at least 30% from the continuous assessment and 70% from the examination; Examinations. The evaluation of the program quality is obtained from the program's examination question papers, marking schemes, answer booklets, test scripts, Research publications and seminar/research presentations. These assessments are done every semester. An annual appraisal is also performed on the faculties responsible for the program[2]. The academic staff regularly meets up (at least after each module) to assess students' progress and their perceptions of lessons. Unfortunately, students are only invited to these meetings thanks to a promotion representative.

Examination questions are vetted at the Departmental graduate board meeting, which holds at least once in a Semester. 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 and Faculty levels[3].

In the Handbook, teaching and practical professional units remain to be expressed as skills. No portfolio, nor similar tool, is proposed to help the students to formally record the skills acquired.

The student employement (and more generally their follow-up) for the study programme is supposed to be monitored every year. The hiring data provided by the institution[4] are also too old (ending in 2014) and should be more specified.

[1] SSR
[2] SSR
[3] SSR
[4] ppt general presentation

The study programme recruitment is of good level, the number of candidates satisfying the minimum required being about 4 times the number enrolled[1]. The commission/person in charge of the enrolment is not clearly identified. In order to meet the requirements of the World Bank, a quota for females and for external students must be ensured, and is reached (80% of students from elsewhere than UniPort).

It appears that the programme has a partial comprehensive information on graduate opportunities, as there is a lack of precisions concerning employment level and companies. More generally, the program does not have any tool to coordinate, monitor and rely on the alumni community.

Concerning the student evaluation of teaching, they regularly fill evaluation forms where the quality of teaching, teaching materials and other facilities required for effective teaching and learning are evaluated. These course evaluation forms are not anonymous[2]. The assessments are passed on to the administration, which makes a return to the academic board at the end of each module. The academic board then analyses the assessments and is enable to propose improvements.

The study programme has defined and implemented anti-plagiarism measures, by the mean of a dedicated unit (IPPTO), responsible for intellectual property rights. It is mandatory for each student to submit their design project, thesis, research publications, and other academic works to this unit before graduation[3].

# V. CONCLUSION

The Experts Committee regrets that the visit to the CEFOR's site at Uniport University was impossible. Even though the meetings in Abuja with our colleagues, leaders of the M.Eng. programmes, were frank and fruitful, the physical presence on site is always rewarding. The Committee's members nevertheless thank their Nigerian colleagues for the overall quality of these meetings and for their readiness to provide them with additional information.

In a general manner, the Committee found the CEFOR M.Eng. programmes in adequation with to the local offers from the job market. The overall programme presents several important strengths, as the excellent teaching staff and the infrastructures provided by the Department, the consequent support from companies, the wide spectrum in terms of specialities, as well as full scholarship for all students. These remarkable points result in an undoubted attractiveness with respect to national students, even in a dominant position in the field of Petroleum Engineering training. Note that the international enrolment is nonetheless absent.

The Committee's members were amazed that most of the graduates from a M.Eng. programme are committed towards a Ph.D. programme, instead of turning to an engineer position in industry. This is more typical of a M.Sc. Degree. If industry remains the aim of the M.Eng. programme, several actions are needed to increase the industrial hiring, as the enhancement in the industrial internship duration, the strict follow-up of the graduates hirings, and/or the fostering of alumni network.

The experts were often faced with the difficulty to position the present Master in "Petroleum and Gas Engineering" with respect to the other Master Degrees proposed by the CEFOR. This was particularly the case in terms of syllabus (somewhat uncomplete). Some efforts in the web-site maintance should easily overcome the latter point. Moreover, the training common core before specializations that the Committee has identified is seemingly too narrow (especially for students continuing in PhD…). Involving students, alumni and industry representatives in certain stages of the training management could help to adjust between a core of fundamental training and various practical specializations.

As a final consideration, the Committee's members want to commend their Nigerian colleagues who have already done numerous efforts to develop an engineering training of high quality.

## STRENGTHS

- A programme well-positioned in the excellence CEFOR system
- An important proximity with the companies, and numerous subsequent opportunities.

[1] oral discussion with the executive board
[2] sample of course evaluation form given in the SSR
[3] SSR

- A wide choice of specialties that well opens to all trades associated with Petroleum & Gas Engineering
- A very good attractiveness at national level
- Good human and infrastructure resources
- Full scholarship offered to all students

## WEAKNESSES

- Programme expectations identical to those of the other training levels proposed by the department
- No evident match between the fact that it is a master's degree in engineering and the high rate of continuing studies in PhD
- Lack of a sufficient common core and specialization not sufficiently progressive
- Industrial internship too short
- Databases concerning students not sufficiently consolidated
- Absence of international enrollment
- Lack of precision in the syllabus (only a partially completed handbook) and overall communication / information supports to review
- Weakness of the follow-up in student hiring
- Absence of network of alumni
- Students are not sufficiently involved in the training management

# RECOMMENDATIONS

The Master of Engineering in Petroleum and Gas Engineering programme, in practice, leads the students to the PhD programme of the same name. This is a quite singular situation, where a rather practical master's training is followed by a PhD curriculum particularly inclined to fundamental training. Actually, the Department of Petroleum and Gas Engineering should reflect upon this and make some drastic choice, like either the M.Eng. must be turned towards industry (and strongly foster the student hiring by industry) or the department accepts the present situation (and transforms the M.Eng. into a M.Sc. with a more theoretical background).
Regardless of the result about the above choice, the Master programme should increase the teaching common core and induce a more controlled advance towards specialization. If the industrial outlets are aimed, the internship duration must be increased, the student follow-up should be consolidated, and a network of alumni fostered.
Databases concerning students are not sufficiently consolidated; in a general manner, the Department's web site should be more precise about its different Master Degrees and their related syllabus.

# VI. COMMENTS OF THE INSTITUTION


**AFRICA CENTRE OF EXCELLENCE**

**2. CENTRE FOR OILFIELD CHEMICALS RESEARCH**
**UNIVERSITY OF PORT HARCOURT**

The World Bank

ACE-CEFORUNIPORT

Tel: +234 (0) 8037099211
http://www.aceuniport.org
acefor@uniport.edu.ng

East West Road,
Choba, P.M. B. 2
Uniport Post Office
Delta Park
Port Harcourt, Nigeria


August 23, 2019

Prof. François PERNOT
Directeur/Director
Département Europe et International
Europe and International Department

Dear Prof François PERNOT

## FEEDBACK ON THE EVALUATION REPORT ON THE M.ENG. PETROLEUM AND GAS ENGINEERING PROGRAMME

# COMMENTS OF THE INSTITUTION

We thank Hceres for their due diligence in the accréditation exercise.
We wish to emphasize that the nomenclature in Nigeria for the degrees awarded for masters programme could be M.Sc , M.ENG or M.TECH. Each university adopts a nomenclature for the Masters programmes as approved by the Senate of the University. All the programmes irrespective of the nomenclatures are approved by the National University Comission (NUC) and meet minimum academic requirements and course contents for award of a Masters degree and enrolment into a PhD programme.

The M.Eng Petroleum and Gas Engineering programme is a self-sponsored programme and not on full scholarship for all students.

There is no confusion in the two masters programmes, we have M.Eng in Petroleum and Gas Engineering peculiar to the nomenclature as approved by the Senate of University of Port Harcourt and M.Sc in Petroleum Engineering and Project Development with a peculiarity of collaboration of joint degree with the IFP School(France).

Both Masters Degree programmes have NUC Accreditations.

Sumarised below are our comments and way forward on the issues highlighted as weaknesses and in the recommendations.

**1.PROGRAMME EXPECTATIONS IDENTICAL TO THOSE OF THE OTHER TRAINING LEVELS PROPOSED BY THE DEPARTMENT**

The remarks made on educational objective outcome are noted, we will develop a focused PEOs and SOs for the various specializations respectively.

**2. NO EVIDENT MATCH BETWEEN THE FACT THAT IT IS A MASTER'S DEGREE IN ENGINEERING AND THE HIGH RATE OF CONTINUING STUDIES IN PhD**

As earlier stated, the MEng programme is not a terminal programme. It was adopted as a peculair nomenclature to University of Port Harcourt, so our Faculty of Engineering had BEng, MEng and PhD while some schools had BSc/MSc/ PhD and others BTech.MTech/PhD. All these follow the same NUC Basic Minimum Standards and face the same accreditations. This can be confirmed with NUC. The volume of research and publications in international journals also attest to the quality and rigour of the

programme. Many of our M.Eng graduates have obtained PhDs from Nigerian Universities and abroad. Many of the Lecturers in most Nigerian Universities are our graduates and Alumni. Many are also teaching and working abroad.

Moreover, the graduates from this programme are not only going for PhD but are widely employed in the oil and gas industry.

**3. LACK OF A SUFFICIENT COMMON CORE AND SPECIALIZATION NOT SUFFICIENTLY PROGRESSIVE**

The students had sufficient common core courses before admission for the Masters programme.
Prior to admission to the masters programs, the students had at least 30 semester hours of mathematics and basic science courses and at least 45 semesters hours of basic engineering courses that gave them fundamental reinforcement for applied mathematics and modelling competences in the masters programme.

Moreover, at the Masters level, irrespective of specialisation, there are some common courses such as
PNG 800.1 : Mathematical Techniques in Petroleum Engineering
PNG 805.1 : Advanced Evaluation of Oil and Gas Properties
CGS 801.1 : ICT and Research Method

PNG 820.2 : Graduate Seminar in Petroleum Engineering
CGS 802.2 : Management & Entrepreneurship
And a suite of common Electives

We have the following specialisations common in most Petroleum Engineering programmes worldwide

1. Reservoir Engineering
2. Production Engineering
3. Drilling Engineering
4. Petroleum Economics
5. Gas Engineering (unique to this university)

**4. INDUSTRIAL INTERNSHIP TOO SHORT**

The students had sufficient internship exposure during their undergraduate level and Masters tenure.The undergraduate programme is tailored to enable the students to acquire a total of 12 calendar months of Supervised Industrial Work Experience Scheme (SIWES) out of which 6 months industrial internship is done in the penultimate year before graduation, and during the masters programme students are exposed to industry relevant projects where they have at least 6 months exposure with the industry to sharpen their professional experience.
Therefore, their industrial internship is adequate.

**5. DATABASES CONCERNING STUDENTS NOT SUFFICIENTLY CONSOLIDATED**

The university has a central database of almuni at the University Advancement Office and the Alumni Office as well as the University Foundation. The database is segregated according to Faculty and Department. We shall however extract the database of our Alumni, update and consolidate and make available in our website.

**6. ABSENCE OF INTERNATIONAL ENROLLMENT**

We used to attract foreign students particularly from African countries. The economic downturn and high exchange rate affected international enrolment. However, we will intensify regional drive to enhance our international student recruitment.

As a regional Centre of Excellence, ACE-CEFOR has policies in place that guide the recruitment, retention and support of the international students in the Centre.

- All necessary information about the Centre and its programmes will be made available to countries in West African sub-region through their embassies in Nigeria.
- The programmes and activities of the ACE-CEFOR will be placed on the internet using the Google platform.
- The University and the Centre websites will be used to advertise the programmes and activities of the Centre.
- The quarterly Newsletter of the regional facilitator for ACE, Association of African Universities (AAU), will be used to disseminate information about ACE-CEFOR programme.
- The University of Port Harcourt has an MoU with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) on Staff and students exchange programmes and ACE-CEFOR is already using the Forum to recruit regional students from East and Southern Africa and ACE-CEFOR will continue to use the Forum as it has great potential for the Centre to achieve the thirty (30) percent admission policy for regional students.
- Flyers will be used for awareness campaign of the Centre and its programmes at oil and gas related conferences holding in sub-Saharan Africa.

- Collaborating with the International partners of the Centre is an avenue to be explored for recruiting regional students. The International Oil Companies (IOCs) operating in Nigeria will attract regional students to the Centre under their education for Sustainable Development Programmes.

In order to attract and retain high caliber students, the Centre will give scholarships to all regional students that meet the requirements for admission into the programmes of the Centre.

**7 LACK OF PRECISION IN THE SYLLABUS (ONLY A PARTIALLY COMPLETED HANDBOOK) AND OVERALL COMMUNICATION / INFORMATION SUPPORTS TO REVIEW**

We will update our handbook and overall communication network in our website and other avenues as applicable.

**8. WEAKNESS OF THE FOLLOW-UP IN STUDENT HIRING**

We will develop a more effective follow-up mechanism in student hiring and tracer records

**9. ABSENCE OF NETWORK OF ALUMNI**

Our Alumni have their Networks in the various Companies and also abroad. They meet every year during the Annual Conference of the Society of Petroleum Engineers, first week in August. The Alumni officer in the university Advancement Office/Foundation participates in the Network programmes.

All graduates are part of the bigger University Alumni Association which is even represented in the University Governing Council by a representative

The Department-specific alumni database and network will be updated and linked to our website. After the 40th anniversary of the University, it was decided to appoint a senior academic Alumni Liaison Officer to over see alumni relations.

**10. STUDENTS ARE NOT SUFFICIENTLY INVOLVED IN THE TRAINING MANAGEMENT**

Students are members of Department SPE Chapter and are involved in many programmes within the Department such as Field trips, attendane of SPE Meetings and Conferences and organising events and participating in competitions. They are also involved in Faculty of Engineering Association that liaises with Departmetal and Faculty Management and also participates in university-wide students union activities.

We will develop a more robust student inclusive management team, which will involve students
in training management .

No doubt as we implement the protocols as recommended, the programme will become an outatanding regional centre of excellence for oil and gas human capital development.

Yours sincerely,

Professor Ogbonna F. Joel
Centre Leader, ACE-CEFOR

International evaluation and accreditation

# ACCREDITATION DECISION

## Master Eng. Petroleum and Gas Engineering

Centre for Oilfield Chemical Research
University of Port-Harcourt, Port-Harcourt, Nigeria

**September 2019**

# SCOPE OF THE ACCREDITATION GRANTED BY HCÉRES

Hcéres has built its evaluation process based on a set of objectives that higher education institution study programmes must pursue to ensure recognised quality within France and Europe. These objectives are divided up into four fields among which are the accreditation criteria.

As for the "External Evaluation Standards", the accreditation criteria have been specifically designed for foreign programmes. The accreditation criteria were adopted by the Board on June 2016 and are available on the Hcéres website (hceres.fr).

The accreditation committee, meeting his accreditation decision, has wholly taken into account the final evaluation report of the study programme. This accreditation decision is the result of a collegial and reasoned process.

The accreditation decision issued by Hcéres shall not grant any rights whatsoever, whether in France or abroad. The decision on training programme accreditation confers an accreditation label and does not infer recognition of the accredited qualifications. The Hcéres accreditation process therefore has no impact on the qualifications recognition process in France.

# FULFILLMENT OF ACCREDITATION CRITERIA

## FIELD 1: AIMS OF THE STUDY PROGRAMME

### Accreditation criterion

The objectives of the study programme with regard to knowledge and skills to be acquired are clearly defined and communicated. Students and other stakeholders are aware of outcomes in terms of job opportunities and further studies.

### Criterion assessment

The program proposes a coherent content in adequacy with the national needs in engineers in the different fields of petroleum and gas economy. Nevertheless, the communication towards the candidates needs to be enhanced, especially for better differentiating the objectives of the different graduations proposed by the CEFOR. Moreover, the positioning of this Master Engineering in relation to the Master of Sciences in the same field by the same team must absolutely be specified.

## FIELD 2: POSITION OF THE STUDY PROGRAMME

### Accreditation criterion

The study programme has set a comprehensive positioning suited to its objectives and including a clear link with research, scholarly partnerships and/or with the economic and social world, national and/or international partnerships.

### Criterion assessment

National leader in the field, enjoying a rich and buoyant environment from both university and business point of views. The program is at the convergence of academic and industrial objectives.

## FIELD 3: STUDY PROGRAMME TEACHING STRUCTURE

### Accreditation criterion

The study programme includes a set of teaching units that are coherent, gradual and adapted to all kind of students. The study programme allows students to acquire additional skills that are useful for employment or further study.
Internships and projects are included in the study programme curriculum. So are Information and Communication Technologies in Education (ICTE) and education innovations. The study programme prepares students for the international environment.

### Criterion assessment

A rich choice of specialties, but fundamentals seemingly need to be strengthen and a more progressive specialization should be offered.

## FIELD 4: STUDY PROGRAMME MANAGEMENT

### Accreditation criterion

The study programme is implemented by a formally identified and operational teaching team including stakeholder and student participation. It is carried out by an educational team which benefits from clear and up-to-date data. Methods for checking knowledge are explicitly stated and communicated to students. Teaching and practical professional units are expressed in terms of skills.
Anti-fraud measures have been implemented.

### Criterion assessment

A steering of the training is correctly carried out, but a lack of dedicated tools for systematic follow-up of the students, in particular concerning their professional insertion.

# ACCREDITATION DECISION

Considering the accreditation criteria analysis detailed above, the accreditation commission takes the following decision:

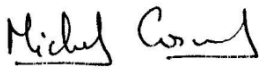
**"Five-year unreserved accreditation decision"**

and draws attention to the various recommendations made by the committee of experts in its evaluation report:

1- The Master of Engineering in Petroleum and Gas Engineering programme, in practice, leads the students to the PhD programme of the same name. This is a quite singular situation, where a rather practical master's training is followed by a PhD curriculum particularly inclined to fundamental training. Actually, the Department of Petroleum and Gas Engineering should reflect upon this and make some drastic choice, like either the M.Eng. must be turned towards industry (and strongly foster the student hiring by industry) or the department accepts the present situation (and transforms the M.Eng. into a M.Sc. with a more theoretical background).
2- Regardless of the result about the above choice, the Master programme should increase the teaching common core and induce a more controlled advance towards specialization. If the industrial outlets are aimed, the internship duration must be increased, the student follow-up should be consolidated, and a network of alumni fostered.
3- Databases concerning students are not sufficiently consolidated; in a general manner, the Department's web site should be more precise about its different Master Degrees and their related syllabus.

**SIGNATURE**

For HCERES and on behalf of



Michel COSNARD,

President

Date: Paris, September 4th, 2019

The evaluation reports of Hceres
are available online : www.hceres.com

**Evaluation of clusters of higher education and research institutions**
**Evaluation of higher education and research institutions**
**Evaluation of research**
**Evaluation of doctoral schools**
**Evaluation of programmes**
**Evaluation abroad**

targeting quality
Hcéres

2 rue Albert Einstein
75013 Paris, France
T. 33 (0)1 55 55 60 10

hceres.com @Hceres_ Hcéres