

EVALUATION AND ACCREDITATION DOCUMENTS

M.Sc. Pharmaceutical Microbiology

Africa Centre of Excellence in Phytomedicine
Research and Development (ACEPRD)
University of Jos

Nigeria

September 2019

CONTENTS

EVALUATION REPORT3 - 14
COMMENTS OF THE INSTITUTION15 - 16
ACCREDITATION DECISION 17 - Following

EVALUATION REPORT

M.Sc. Pharmaceutical Microbiology

Africa Centre of Excellence in Phytomedicine
Research and Development (ACEPRD)
University of Jos
Nigeria

JUNE - 2019

The University of Jos has mandated the Hcéres to perform the evaluation of its Master in Pharmaceutical Microbiology 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 Hcéres¹ :

Michel Cosnard, President

On behalf of the experts committee² :

Dominique Laurain-Mattar, 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.....	6
METHODS AND RESULTS OF THE PREVIOUS ACCREDITATION(S)	6
HUMAN AND MATERIAL RESOURCES DEDICATED TO THE PROGRAMME	6
STUDENT POPULATION: EVOLUTION AND TYPOLOGY OVER THE LAST 4 YEARS	7
II. On-site visit description	7
Composition of the experts panel	7
On-site visit description	7
III. PRESENTATION OF THE STUDY PROGRAMME	8
1 – PRESENTATION OF THE STUDY PROGRAMME.....	8
2 - Presentation of the programme's self-evaluation approach.....	8
IV. EVALUATION REPORT	9
1- Aims OF THE STUDY programme	9
2 – POSITION OF THE STUDY PROGRAMME.....	9
3 – STUDY PROGRAMME TEACHING STRUCTURE	10
4 – PROGRAMME MANAGEMENT	12
V. conclusion	13
StrENGTHS.....	13
WeakNESSES	13
Recommendations	14
VI. COMMENTS OF THE INSTITUTION.....	15

I. STUDY PROGRAMME IDENTITY SHEET

1. University/institution: University of Jos, Africa Centre of Excellence in Phytomedicine Research & Development (ACEPRD)
2. Component, faculty or department concerned: Faculty of Pharmaceutical Sciences, Department of Pharmaceutical Microbiology and Biotechnology
3. Programme's title: MSc in Pharmaceutical Microbiology
4. Training/speciality: Master of Science degree in Pharmaceutical Microbiology
5. Year of creation and context: 2014
6. Site(s) where the programme is taught (Town and campus): Africa Centre of Excellence in Phytomedicine Research & Development (ACEPRD), University of Jos
7. Programme director:
 - a. Surname, first name: Aguiyi, John Chinyere
 - b. Profession and grade: Professor
 - c. Main subject taught: Pharmacology and Genetic engineering

METHODS AND RESULTS OF THE PREVIOUS ACCREDITATION(S)

8. Methodology and agency

The Africa Center of Excellence in Phytomedicine Research and Development (ACEPRD) was established in 2014 through a World Bank alliance between the regional governments of West Africa, to harness the untapped potentials collaborations amongst African researchers with the focus of creating a sustainable agenda for health innovation in Nigeria and Africa.

9. Results

The MSc & PhD programmes in Pharmacognosy, Clinical Pharmacy, Pharmaceutical microbiology, Biotechnology, and Bioinformatics & Genomics have been evaluated and accredited by the National Universities Commission in 2017.

HUMAN AND MATERIAL RESOURCES DEDICATED TO THE PROGRAMME

10. Human resources

The human resources including the number and the level of teachers, and representatives if the different disciplines are in good accordance with the needs for training, research and mentoring internships.

Clinical Pharmacy: 4 Professors, 1 Senior Lecturer, 10 Lecturers

Biotechnology: 11 Professors, 2 Senior Lecturers, 1 Lecturer II, 4 Readers

Bioinformatics and genomics: 9 Professors, 3 Senior Lecturers, 1 Reader

Pharmaceutical microbiology: 6 Professors, 3 Senior Lecturers, 1 Reader

Pharmacognosy: 8 Professors, 1 Senior Lecturer, 2 Lecturers, 2 Readers

11. Material resources

Recent equipments to perform sophisticated analyses have been acquired:

- Genetic analysis system: Beckman Coulter Genome Lab GeXP;
- High performance separation-Es Module with OptiMS Technology: Beckman Coulter's CESI 8000 Plus;
- Pharmaceutical analysis system: Beckman Coulter PA 800 Plus;
- Gas Chromatography-Mass Spectrophotometer: Scion 456-GC;
- Multi EA 4000: Analytkjena Elemental Analyser;
- Thermal Cycler: Jenway UV Spectrophotometer, PCR;

- Beckman Coulter- Allegra X15 Cold Centrifuge;
- Production of distilled and de-ionized water: Milli-Q Lab Water System;
- Electrophoresis equipment;
- Dissecting Microscope Titech Research Fluorescence Microscope.

STUDENT POPULATION: EVOLUTION AND TYPOLOGY OVER THE LAST 4 YEARS

MSc Pharmaceutical Microbiology

S/No	YEAR	TOTAL/YEAR	FEMALES	MALES	INTERNATIONAL STUDENTS	NATIONAL STUDENTS	TOTAL
1	2015/2016	-	1	3	1	3	4
2	2016/2017	-					
3	2017/2018	2					
4	2018/2019	2					

II. ON-SITE VISIT DESCRIPTION

COMPOSITION OF THE EXPERTS PANEL

- Dominique LAURAIN-MATTAR, Professor, University of Lorraine, committee leader
- Valérie SCHINI-KERTH, Professor, Strasbourg University
- Frédéric RELAIX, Professor, Paris-Est University
- Mathilde COLAS, Student graduated from University of Technology of Troyes.

Hcéres was represented by Pierre COURTELLEMONT, science advisor.

ON-SITE VISIT DESCRIPTION

- Date of the visit: June the 10th, 2019.
- Organization of the visit: the visit was made the 10th of June, 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.
- People met (on NUC site):

John C. Aguiyi, director ACEPRD
 Ndidi C. Ngwuluka, Head of Department Pharmaceutics
 Ikoni Ogaji, Dean, Faculty of Pharmaceutical Sciences
 Dayom D. Wetkos, Head of Department, Clinical Pharmacology
 Dafam D. Gwatau, Head of Department, Pharmacognosy
 Ezekiel O. Afolabi, PG coordinator, Head of Bioinformatics
 Patrick O. Olorunfemi, Head of Department Pharmaceutical Microbiology
 Goni Dogo, ACEPRD laboratory
 Mark Kpamak, Project Administrator
 Taiwo E. Alemika, Deputy Centre Leader
 Patricia O. Odumosu, Head, Department of Pharmaceutical & Medicinal Chemistry

18 students (Arinze Umera (PhD Biochemistry), Akinsanmi Augustina Oduje (PhD Biochemistry), Chioma Eze (PhD Applied Microbiology), Amaka Ubani (MSc Bioinformatics and genomics), Francis Akpadja Kodjo* (MSc Pharmaceutical Microbiology), Adama Denou** (PhD Pharmacognosy), Rafiatou Ousmane* (MSc Biotechnology), Sariem Comfort (PhD Clinical Pharmacy), Daouda Labarou*** (PhD Bioinformatics and genomics), Agwom Francis (PhD Pharmaceutical Chemistry), Tougoma Atehezi* (PhD Physiology), Atchrimi Komi Sagnan* (PhD Physiology), Morenikeji Oluwatoyin (MSc Bioinformatics and genomics), Lapang Dominic (MSc Bioinformatics and genomics), Rwiann

Victor (MSc Bioinformatics and genomics), Hamza Abdulraham (MSc Bioinformatics and genomics), Samuel Isaac (MSc Bioinformatics and genomics), Ammanuel Dabwer Ben (MSc Biotechnology))
 * from Togo, ** from Mali, *** from Niger. Other: Nigerians.

Partners and alumni by videoconferencing

III. PRESENTATION OF THE STUDY PROGRAMME

1 – PRESENTATION OF THE STUDY PROGRAMME

- The institution delivering the programme is the University of Jos, Nigeria and the Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD).
- The Masters programme offers training in Pharmaceutical Microbiology, addressing the study of the Microbial structure and physiology, bacteria genetics, analytical methods in microbiology, ecology of microorganisms as it affects the pharmaceutical industry and hospital environments, sterile preparation, factory and hospital hygiene, chemotherapy, bacterial drug resistance, biostatistics. The MSc in Pharmaceutical Microbiology borders on establishment of standards to ensure quality Pharmaceutical Microbiology education and drug industry and drug quality control.
- The specific features include: Enrolment of students (including regional) for various postgraduate programmes, English for Special Purposes (ESP) for regional students from Francophone countries, E-learning development with subscription to Science Direct and NgREN, and Internships for students in industries to forge academia-industry partnerships.
- The program is developed within the Department of Pharmaceutical Microbiology and Biotechnology for teaching and they will develop their research in the laboratory facilities at the ACEPRD or associated partners, which is situated at the University of Jos, and also at the Faculty of Pharmaceutical Sciences. No sub-specialization is indicated for the MSc of Pharmaceutical Microbiology. Students enrolled must possess a Bachelor of Pharmacy or any other degree such as Pharm.D. from a recognized University, not below CGPA of 2.4.
- The Masters study training programme is structured in Training of students and technical experts/policymakers through short courses on the study of the physical, chemical, biochemical and biological properties of drug substances of natural origin in order to provide high level and specialized manpower for Pharmaceutical Research Institutions, Institutions of Higher Learning and Quality Control Industries and to provide knowledge in Traditional Medicine Practice.
- Its position in the local, regional and national university landscape is not mentioned.
- The aims of this training programme are to achieve excellence in educational training and applied research in drug discovery, production and management of phytomedicine, clinical pharmacology, biotechnology, pharmaceutical microbiology, proteomics, genomics and bioinformatics.
- To provide specialization that addresses regional and national health challenges and strengthening capacity and application of phytomedicine research and development as well as knowledge dissemination.
- To facilitate an enabling environment that will stimulate promising research and training, facilitating dissemination, storage and sharing of academic, socio-economic and cultural development in Africa.

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

The Committee that worked for & prepared the Accreditation report to HCERES comprised of the following:

1. Prof. Taiwo E. Alemika - Deputy Centre Leader (Chairman)
2. Prof. Ikoni J. Ogaji - Dean, Faculty of Pharmaceutical Sciences
3. Dr. Patrick O. Olorunfemi - Head, Department of Pharmaceutical Microbiology & Biotechnology
4. Dr. Ndidi C. Ngwuluka - Head, Department of Pharmaceutics
5. Dr. Wetkos D. Dayom - Head, Department of Clinical Pharmacy & Pharmacy Practice
6. Dr. Dalen G. Dafam - Head, Department of Pharmacognosy & Herbal Medicine
7. Dr. Patricia O. Odumosu - Head, Department of Pharmaceutical & Medicinal Chemistry

8. Prof. Ezekiel O. Afolabi - Department of Pharmaceutical & Medicinal Chemistry
9. Mr. Mark Kparamak - ACEPRD Admin Officer (Secretary)

IV. EVALUATION REPORT

1- AIMS OF THE STUDY PROGRAMME

The MSc Pharmaceutical Microbiology course at the Africa Centre of Excellence in Phytomedicine Research & Development in the University of Jos is positioned in order to provide students with quality knowledge and skills required to produce graduates knowledgeable in Pharmaceutical Microbiology education, drug industry and drug quality control. Objectives with regard to knowledge and skills to be acquired are clearly stated. The name of the study programme is clear with regard to its objectives and content. ACEPRD provides an information booklet for students containing the objectives and content of the programme and policies (Students' Handbook for the Africa Centre of Excellence in Phytomedicine Research & Development). The MSc programme in Pharmaceutical Microbiology is well positioned in terms of job opportunities. Overall the aims of the study programme are good and well communicated to students.

The MSc in Pharmaceutical Microbiology of the Africa Centre of Excellence in Phytomedicine Research & Development in University of Jos, Nigeria, provides students with knowledge and skills required to produce graduates knowledgeable in theory and practice in Pharmaceutical Microbiology.

Objectives include to provide (a) in the theory and encourage thinking and research in Pharmaceutical Microbiology, (b) high level and specialized manpower for Pharmaceutical Research Institutions, Institutions of Higher Learning and Quality Control Industries. The aim is to produce graduates who can pursue M.Phils. and doctorate degree in Pharmaceutical Microbiology. ACEPRD provides an information booklet for students containing the objectives and content of the programme and policies (Students' Handbook).

The study programme is clearly positioned in terms of further study programmes (PhD). However information of job opportunities is not provided to the students at the beginning of their enrolment. The study programme is positioned with regard to the business world in which graduates are in high demand.

2 – POSITION OF THE STUDY PROGRAMME

The MSc programme in Pharmaceutical Microbiology has several academic and Industrial partnerships but their precise contribution to the programme has not been detailed. Several national and international socio-economic partners support the programme. The programme offers a limited number of components of teaching through research and proposes several components in association to research such as internship, seminars and workshops. Mechanisms to encourage the mobility of students, teaching and administrative staff are indicated. However no information about the position of the MSc programme in Pharmaceutical Microbiology within local, national, regional and international range of study programme is provided in the transmitted documents. Very low number of students is enrolled in MSc Pharmaceutical Microbiology. Overall positioning of the programme appears insufficient.

No information about the position of the MSc programme in Pharmaceutical Microbiology within local, national, regional and international range of study programme is provided in the transmitted documents.

The programme involves collaboration with universities within the country and international universities. Guest lecturers from partner universities are involved in the training of the students. International Advisory Board includes academics from Salford University, Manchester, Université de Lyon, France, Sheffield Hallam University, UK, Université de Lomé, Université de Abomey-Calavi, Benin Republic Université de Sciences Techniques and Technology of Bamako, Mali, Université du Burkina Faso, Ouagadougou, Salford University, UK. Partnerships are well identified, including active national (National Veterinary Research Institute, National Agency for Food and Drug Administration and Control), regional and international academic and Industrial/Sectoral partners involved in education and research. National and international socio-economic partners include Council for Advancement and Support of Education (CASE), USA, World Bank, USA, Association of African Universities, (AAU), Ghana.

All students enrolled in the Center's MSc programs will undertake a 1-month internship program at an industry related environment; they will be expected to identify a challenge for which a solution can be proffered. This

should take place at the end of the first semester for Master students. Some students are performing their Master thesis research in a Central Laboratory (ACE), industries, and also in hospitals. For example in the MSc in Clinical Pharmacy, 9 students performed their Master thesis in the Department of Clinical Pharmacy and Pharmacy Practice, 11 MSc in Bioinformatics and Genomics in the Department of Pharmaceutical Chemistry, 9 MSc in Pharmacognosy in the Department of Pharmacognosy and Traditional Medicine, 3 MSc in Pharmaceutical Microbiology in the Department of Pharmaceutical Microbiology and Biotechnology, and 2 MSc of Biotechnology in the Department of Pharmaceutical Microbiology and Biotechnology.

Internship placement for MSc students:

- a. Juhel Industries Ltd, Awka
- b. Pauco Pharmaceuticals Ltd, Awka
- c. Gauze Pharmaceuticals Ltd, Awka
- d. ECWA Pharmaceuticals
- e. Gwalgwalada Specialist Hospital
- f. Plateau Specialist Hospital
- g. Jos University Teaching Hospital

Seminars: Research project proposal; selected topics on current trends in Pharmacy practice, and any relevant subjects chosen by the student.

Workshops: Three were indicated in the documents in relation with phytomedicine.

There are partnership agreements between the institution and businesses, associations or institutions involved in an activity linked to the study programme. However Memorandum of understanding has to be provided. Cooperation agreements or partnerships (regardless of whether they award qualifications) have been signed with foreign institutions and are adapted to the aims of the study programme.

During the discussion with students, one student indicated having been three times and each time for 3-month period in Oslo for analysis of natural products by using chromatographic techniques. He was supported by his country of origin (Mali). Senior and junior faculty of Pharmacy members of all the disciplines are sponsored for workshop, conferences, and professional meetings. Workshop and conferences are organised by ACEPRD.

3 – STUDY PROGRAMME TEACHING STRUCTURE

The MSc in Pharmaceutical Microbiology programme trains students for knowledge and skills in the study of the Microbial structure and physiology, bacteria genetics, analytical methods in microbiology, ecology of microorganisms as it affects the pharmaceutical industry and hospital environments, sterile preparation, factory and hospital hygiene, chemotherapy, bacterial drug resistance, biostatistics, consistent with the defined objectives. No detail regarding the positioning of the different core and elective courses regarding the MSc program is provided, their positioning in the study programme to determine that students can gradually specialize is not provided. Online pedagogical materials is available with 24-internet in all facilities. Internship programme allow students to acquire relevant skills.

Following the course content of the programme and the resulting examination, the students are enrolled in internships that lasts 4 weeks in an institution outside the location of the programme, for example in Pauco Pharmaceuticals, Gauze Pharmaceuticals, Juhel Pharmaceuticals, ECWA Pharmaceuticals, Gwalgwalada Specialist Hospital, Plateau Specialist Hospital, Jos University Teaching Hospital. The objectives, methods and assessment of the projects and internships are defined and communicated. The study programme encourages international mobility through established partnership. It is important to note that the University of Jos Faculty of Pharmaceutical Sciences is engaged in the research and commercial aspect on anti-snake venom vaccine, anti-fertility drugs, mushroom and Artemisia annua cultivation.

The study programme (MSc in Pharmaceutical Microbiology) includes a set of teaching units such as the study of the Microbial structure and physiology, bacteria genetics, analytical methods in microbiology, ecology of microorganisms, sterile preparation, factory and hospital hygiene, chemotherapy, bacterial drug resistance, biostatistics, that is consistent with the objectives defined. The core components train students for knowledge and skills in Pharmaceutical Microbiology. The duration of each module (in hours) and the workload expected of students (in hours) are explicitly stated and known and reported in Student's Handbook.

No detail regarding the positioning of the different core and elective courses regarding the MSc program is provided. In case of research, the Master thesis project is based on teaching courses, seminars and the student's interest.

No lifelong training is included in the documents provided. E-learning and a computer laboratory are available to all students. Online pedagogical materials is available with 24-internet in all facilities, and all students have personal computers and internet access.

English for Special Purposes (ESP) for regional students from Francophone countries is provided. The study programme includes components that prepare students for employment. These include course delivery that emphasizes the special needs of the working world, the participation of industry partners in curriculum development, review and teaching, and the fielding of students for industry experience as requirement before graduation. Students are expected to identify a research topic of interest in interaction with the teaching staff, write a research proposal after literature review and defend the proposal before their teachers and colleagues. In addition, they are exposed to conferences, seminars, international forums and have access to the international literature. Following review, the students conduct various parts of the research before writing a research thesis. The research thesis is defended before a panel of internal and external experts and rated on the basis of originality and quality.

The study programme includes components to prepare students for employment and inform them about the working world. Students are exposed to people from the industry and hospital when they contribute to teaching, and during mentorship of internship. It is important to note that in the last ten years, the University of Jos Faculty of Pharmaceutical Sciences has been in the forefront of the research on anti-snake venom vaccine, anti-fertility drugs, mushroom and *Artemisia annua* cultivation. The University is engaged in the commercial North Central zone for the cultivation of *Artemisia annua* and the key plant in Artemisinin-based combination therapy at the Centre's Farm in Langtang South LGA, of Plateau State.

The study programme includes components that focus on understanding the world of research and its results. Such as during the elaboration of the research proposal, development of Master thesis research and writing of thesis under the supervision of a scientist. They will also be exposed to the world of research during their 1-month internship in an industry-related environment at the end of the first semester.

The study programme includes practical work components. Practical training can be acquired during the Hospital Pharmacy Practice depending on the host Clinical Departments. In addition, research dedicated practical work is obtained during the 1-month internship at the Centre or in an industry-related environment at the end of the first semester, seminars at the level of the Department and University, and during their Master thesis research.

The study programme includes teaching components in one foreign language. For International students from French speaking Countries, English courses are provided.

Internships and projects are included in the study programme curriculum. Students will undertake a 1-month internship at an industry-related environment after the first 6 months, and during their Master Thesis research. The objectives, methods and assessment of projects and internships are explicitly stated and understood by students.

The supervisor and external supervisor contribute the help to student to find the appropriate internships. Little information is provided to students regarding their career plans.

Students are trained for additional skills such as scientific writing, oral communication, computer skills, and access to data bases to obtain scientific information on lead compounds from natural resources, seminars including discussion with their supervisors.

Students have access to e-learning in a dedicated computer laboratory Wi-Fi access all over the Campus, access to data bases such as Science Direct. Innovative teaching practices include E-learning and project-based learning to define their Master thesis research project.

There are refresher courses for some students starting the study programme, for English language.

The student will benefit from the input of the scientific supervisor and a supervisor of the Department during the project research proposal, seminars, Master thesis research, writing and defence.

The study programme prepares students for the international environment. Some students can spend research time with the international partners such as Norway, and Germany to execute additional research experiments by using equipment not available at the Centre.

International students have the possibility to improve their English when arriving in Nigeria.

The study programme encourages international mobility through sending and receiving students via international partnerships. During the on-site visit, the information was provided that one student went to Oslo and one to Germany however the information of student's level and track was not indicated.

4 – PROGRAMME MANAGEMENT

The study programme is well implemented by a formally identified teaching team with roles and responsibilities clearly defined and presented in the Centre's website. Methods for testing knowledge are explicitly stated and consistent with the expected results of the study programme. Student recruitment methods are clearly defined and are transparent. The flow of national and international students is too limited until now. The methods for student evaluation of teaching are appropriate. Overall the programme management can be improved in particular regarding graduates outcome, and evaluation of teaching and of the programme to further develop the programme.

The programme has an appropriate number of teachers including Professors, senior Lecturers, Lecturers and Readers to cover the different specialities. The role of each staff teaching member is clearly identified and described on the Pharmaceutical Sciences internet site (<http://aceprd.unijos.edu.ng/medicinal-plants>) and also in the Students' Handbook. The teaching resources including classrooms, libraries, one computer room are appropriate to execute the study program. The list of teachers is contained in the Students' handbook and can be assessed at the PRD website.

During seminars, Master project proposal defence and Master thesis defence, teaching and research members are attending.

The role and responsibilities of members of the teaching team are clearly defined. The involvement of teachers in the different teaching courses is well defined. In addition, information of relevant Centre staff and Faculty including Program Manager, Deputy Center Leader, Dean Faculty of Pharmacy, Deputy Dean, Internship Coordinator, Students' Welfare officer, Animal House Manager and Director Health Center are provided in the PRD Student's Handbook.

The composition and roles of the Department Academic Board, Post-graduate Academic Board, the Senate and the examination board are well outlined by the University in the Academic Regulations and Teacher's Code.

Courses evaluation include: continuous assessment, seminars, written examination, a project report in approved research area examined by an external examiner. The rules for validation of skills are clearly stated. Students will be assessed based in the regulation governing examination and assessments of the school of the post-graduate studies. Every enrolled student shall have attended a minimum of 75 % of total lectures and 100 % of practical sessions to be eligible for examination.

Teaching and practical professional sessions in this programme are expressed as skills. For the MSc of Pharmaceutical Microbiology, skills include the study of the Microbial structure and physiology, bacteria genetics, analytical methods in microbiology, ecology of microorganisms as it affects the pharmaceutical industry and hospital environments, sterile preparation, factory and hospital hygiene, chemotherapy, bacterial drug resistance, biostatistics.

Student numbers for the study programme are monitored regularly. Detailed information regarding students' numbers for each year is provided. In 2018, the number of students in MSc Pharmaceutical Microbiology was only 2, in 2017: 2 and over the last four years 4 including 1 Female.

For the MSc in Pharmaceutical Microbiology, a Bachelor of Pharmacy Degree from a recognized University not below CGPA of 2.4 is required for admission. Candidates from the University of Jos and other recognized Universities are eligible to apply. To attract international students of West and East Africa, the staff members of the Faculty of Pharmaceutical Sciences promote on site the different programmes proposed. As a result, 55 applications were received in Liberia, 3 in Kenya, 16 in Togo, 23 in Mali, 22 in Cameroun, 19 in Niger and 17 in Uganda. The flow of international students is identified: from 2016-2018 4 foreign students were enrolled. However, the country of origin is not provided. However, the number of students enrolled in the MSc in Pharmaceutical Microbiology was not provided.

Recruitment policies and admission criteria including academic prerequisite (undergraduate degree from a recognized University), English skills are in lines with aims of the programme and final qualification of the programme.

Information regarding false declaration is provided.

V. CONCLUSION

The Masters programme offers training in Pharmaceutical Microbiology, since October, 2013. The MSc Pharmaceutical Microbiology course at ACEPRD is well structured, with an adequate number of qualified staff, appropriate communication regarding learning and job outcomes. The MSc Pharmaceutical Microbiology course provide students with knowledges and skills required to produce graduates knowledgeable in drug discovery, production and management of phytomedicine, clinical pharmacology, biotechnology, pharmaceutical microbiology, proteomics, genomics and bioinformatics. Objectives with regard to knowledge and skills to be acquired are clearly stated.

ACEPRD provides an information booklet for students containing the objectives and content of the programme and policies. Communication regarding learning is available at the ACEPRD's website. The MSc programme in Pharmaceutical Microbiology is positioned with very high success in terms of job opportunities (knowledgeable personnel in this field are in high demand).

The MSc programme in Pharmaceutical Microbiology is positioned within local, national, regional and international range of study programmes through collaborations with universities within the country and international universities. Guest lecturers from partner universities are involved in the training of the students, co-supervision of students, internship locations and collaborative research/publications. Appropriate mechanisms are implemented to encourage the mobility of students, teaching and administrative staff. Online pedagogical materials is available with 24-internet in all facilities, and all students have personal computers and internet access.

Students are expected to identify a research topic of interest in interaction with the teaching staff, write a research proposal after literature review and defend the proposal before their teachers and colleagues. Following the course content of the programme and the resulting examination, the students are enrolled in internships that lasts 4 weeks in an institution outside the location of the programme. The study programme encourages the use of digital technologies via adequately trained staff, full internet access and appropriate classroom equipment.

Overall the study programme teaching structure is good. The study programme is implemented by a formally identified teaching team with roles and responsibilities defined. Teachers and technologists are engaged in regular training locally. The program is advertised in the University. Student recruitment methods are clearly defined and are transparent. The flow of national, regional and international students is limited. The methods for student evaluation of teaching and to provide feedback to teachers from students are not yet established.

STRENGTHS

- Job opportunities in hospitals, pharmaceutical industries, and Universities
- Interesting Business Plan with the development for anti-snake venom vaccine and Scabi-Plus products
- Involvement of several industrial and hospital partners proposing internships and contributing to teaching
- National and regional academic partnerships, with industry and organizations relevant to Pharmaceutical Microbiology.

WEAKNESSES

- Low number of students enrolled in MSc Pharmaceutical Microbiology
- No information about laboratory for research
- Limited involvement of associate or guest lecturers or researchers to support strong links between teaching and research

- Limited partnerships with foreign education institutions
- Limited national and international exposure of students to start build a network enabling internship and job opportunities
- Limited comprehensive information on graduate outcomes that contributes to the attractiveness of the programme
- Updated alumni of graduates is missing to facilitate networking for mentoring, internship and job opportunities
- Absence of detailed evaluation of teaching by students and of the programme curriculum by students and external evaluators that helps to optimize the content of the programme for better professional integration
- Tracking incoming and outgoing students and follow-up of the piloting of the training.

RECOMMENDATIONS

- Improve teaching and research networks with regional, national and international partner Universities.
- To mention the position of the MSC in Pharmaceutical Microbiology in the local, regional and national university landscape
- Keep and develop your appropriate business plan to support sustainability
- Improve the attractiveness of the curriculum for national and international students
- Implement guidelines for graduates tracing as well as a platform for the follow-up of alumni
- Communication strategies for the program and its curriculum need to be optimized
- To enhance visibility of the program within the national and regional students and partners.

VI. COMMENTS OF THE INSTITUTION

UJ/ACEPRD/O102/03

August 25, 2019

Prof. François PERNOT

Directeur/Director

Département Europe et International

Europe and International Department

francois.pernot@hceres.fr

Dear Sir

COMMENTS OF THE INSTITUTION

The Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD), Faculty of Pharmaceutical Sciences, University of Jos has submitted 9 postgraduate programmes.

The HCERES has considered the programmes for evaluation and consequent accreditation, with the report made available to the Centre for comments.

The team of the ACEPRD/Faculty that considered the report and made comments available are:

- | | |
|-----------------------------|--------------------------------------|
| 1. Prof. John C. Aguiyi | Director/Centre Leader |
| 2. Prof. Ikoni Ogaji | Dean, Faculty of Pharmacy Sciences |
| 3. Prof. Taiwo E. Alemika | Deputy Director, ACEPRD |
| 4. Prof. Patrick Olorunfemi | Head, Biotechnology and Microbiology |
| 5. Dr. Wetkos Dayom | Head, Clinical Pharmacy and Practice |
| 6. Dr. Dalen Dafam | Head, Pharmacognosy |
| 7. Dr. Patricia Odumosu | Head, Bioinformatics and Genomics |
| 8. Mr. Mark Kparmak | Project Administrator |

Members of the team considered the report of each of the postgraduate programmes and made its comments as follows:

M.SC MICROBIOLOGY

The position of the programme raised by the agency in page 6 under Study Programme Teaching Structure: No detail regarding the positioning of the different core and elective courses regarding the M.Sc. programme is provided- This is answered paragraph 3 of page 9.

Page 5, information on job opportunities, is not currently available to the students from inception. However, as the curriculum is reviewed, this will be made available to students to guide their career choices also.

Page 7, paragraph 5 is not peculiar to Microbiology. It is more tilted to clinical pharmacy.

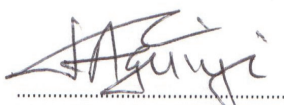
The figure on page 8 is not correct. The correct figure is on page 3.

On the issue of low number of students, the programme is new; efforts will be made to have more local and international students.

The programme has postgraduate laboratories at the Faculty/Department as well as students conduct their researches at the ACEPRD Laboratories.

All other observations of the agency is noted for implementation. All recommendations are also noted.

Thank you.



Prof. John C. Aguiyi
Director/Centre Leader, ACEPRD
For: Team, ACEPRD

NB: URL TO LABORATORIES

http://aceprd.unijos.edu.ng/viewing_image/322fc987-4e53-455a-9063-2de163ab2ee7/
<http://aceprd.unijos.edu.ng/playing-video-d6aea9cb-613a-4b36-889b-bb29a145bd69/>

ACCREDITATION DECISION

M.Sc. Pharmaceutical Microbiology

Africa Centre of Excellence in Phytomedicine
Research and Development (ACEPRD),
University of Jos, Nigeria

JUNE – 2019

SCOPE OF THE ACCREDITATION GRANTED BY HCERES

HCERES 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 HCERES 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 HCERES 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 HCERES 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 MSc Pharmaceutical Microbiology course at the Africa Centre of Excellence in Phytomedicine Research & Development in the University of Jos is positioned in order to provide students with quality knowledge and skills required to produce graduates knowledgeable in Pharmaceutical Microbiology education, drug industry and drug quality control. Objectives with regard to knowledge and skills to be acquired are clearly stated. The name of the study programme is clear with regard to its objectives and content. ACEPRD provides an information booklet for students containing the objectives and content of the programme and policies (Students' Handbook for the Africa Centre of Excellence in Phytomedicine Research & Development). The MSc programme in Pharmaceutical Microbiology is well positioned in terms of job opportunities. Overall the aims of the study programme are good and well communicated to students.

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

The MSc programme in Pharmaceutical Microbiology has several academic and Industrial partnerships but their precise contribution to the programme has not been detailed. Several national and international socio-economic partners support the programme. The programme offers a limited number of components of teaching through research and proposes several components in association to research such as internship, seminars and workshops. Mechanisms to encourage the mobility of students, teaching and administrative staff are indicated. However, no information about the position of the MSc programme in Pharmaceutical Microbiology within local, national, regional and international range of study programme is provided in the transmitted documents. Very low number of students are enrolled in MSc Pharmaceutical Microbiology. Overall positioning of the programme appears insufficient.

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

The MSc in Pharmaceutical Microbiology programme trains students for knowledge and skills in the study of the Microbial structure and physiology, bacteria genetics, analytical methods in microbiology, ecology of microorganisms as it affects the pharmaceutical industry and hospital environments, sterile preparation, factory and hospital hygiene, chemotherapy, bacterial drug resistance, biostatistics, consistent with the defined objectives. No detail regarding the positioning of the different core and elective courses regarding the MSc program is provided, their positioning in the study programme to determine that students can gradually specialize is not provided. Online pedagogical materials is available with 24-internet in all facilities. Internship programme allow students to acquire relevant skills.

Following the course content of the programme and the resulting examination, the students are enrolled in internships that lasts 4 weeks in an institution outside the location of the programme, for example in Pauco Pharmaceuticals, Gauze Pharmaceuticals, Juhel Pharmaceuticals, ECWA Pharmaceuticals, Gwalgwalada Specialist Hospital, Plateau Specialist Hospital, Jos University Teaching Hospital. The objectives, methods and assessment of the projects and internships are defined and communicated. The study programme encourages international mobility through established partnership. It is important to note that the University of Jos Faculty of Pharmaceutical Sciences is engaged in the research and commercial aspect on anti-snake venom vaccine, anti-fertility drugs, mushroom and Artemisia annua cultivation.

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

The study programme is well implemented by a formally identified teaching team with roles and responsibilities clearly defined and presented in the Centre's website. Methods for testing knowledge are explicitly stated and consistent with the expected results of the study programme. Student recruitment methods are clearly defined and are transparent. The flow of national and international students is too limited until now. The methods for student evaluation of teaching are appropriate. Overall the programme management can be improved in particular regarding graduate's outcome, and evaluation of teaching and of the programme to further develop the programme.

ACCREDITATION DECISION

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

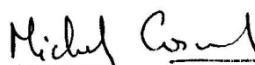
“Five-year unreserved accreditation decision”

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

- Improve teaching and research networks with regional, national and international partner Universities.
- To mention the position of the MSC in Pharmaceutical Microbiology in the local, regional and national university landscape.
- Keep and develop your appropriate business plan to support sustainability.
- Improve the attractiveness of the curriculum for national and international students.
- Implement guidelines for graduates tracing as well as a platform for the follow-up of alumni.
- Communication strategies for the program and its curriculum need to be optimized.
- To enhance visibility of the program within the national and regional students and partners.

SIGNATURE

For HCERES and on behalf of



Michel COSNARD,

President

Date: Paris, September 4th, 2019

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

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