NATIONAL MATHEMATICAL CENTRE, ABUJA

A BRIEF ON NATIONAL MATHEMATICAL CENTRE, ABUJA, NIGERIA TO 15th MEETING OF COMSATS COORDINATING COUNCIL

BY

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PROTOCOL

NMC BRIEF TO COMSATS COUNCIL:: INTRODUCTION

NMC, Abuja, Nigeria was established in 1989 by the Federal Government of Nigeria to, among others:-

- To train and develop high-level personnel in mathematical sciences including mathematics, statistics, computer science and theoretical physics for Nigerian and African Institutions;

- To create a resource Centre to serve national and international communities as a focal point for advanced research and training in the mathematical sciences and its applications;

INTRODUCTION ...

- To enhance collaboration among mathematical scientists especially between young Nigerian scientists, and other advanced and scientists from within and outside Nigeria;
- To identify and encourage young talents in the mathematical sciences;
- To stimulate enthusiasm for the physical sciences in young Nigerian students and scholars;

INTRODUCTION ...

- To prepare Nigeria for a leading role in the mathematical sciences;
- To attract good mathematical scientists from all over the world into the service of Nigeria;
- To encourage and support activities leading to the improvement of the teaching and learning of the mathematical sciences at all levels;
- Tackle national set goals in the development of mathematical sciences;

STRATEGIES .....

In order to achieve the above objectives, the Centre has adopted the following strategies:

- Conduct series of specialized lectures or courses for the purpose of up-grading post-graduate students in the filed of mathematical sciences to a level where they can begin to understand research papers and seminars;
- Conduct series of research lectures for advanced postgraduate as well as post-doctoral and other participants based on a set of pre-assigned research papers, with the objective of generating questions that would be collated, discussed and used to determine new research direction for participants;

STRATEGIES .....

- Conduct seminars, workshops and symposia in such areas as the Academic Board of the Centre may, from time to time, determine or plan;
- Establish and execute a visiting programme for mathematical scientists, under which mathematical scientists can visit the Centre for short periods to work on their individual research problems using the library, computing and other facilities of the Centre.
- Perform such other functions that are related to the above objectives and do such other things as are, in the opinion of the Council, necessary and expedient for carrying out the functions of the Centre.

ACADEMIC PROGRAMMES

The Centre now operates six schools, two Institutes and two academic Departments namely:-

- School of Postgraduate Studies (SPS)
- School of Mathematical Studies (SMS)
- School of Mathematical Sciences Education (SMSE)
- School of Computer Science (SCS)
- School of Theoretical Physics (STP)
- School of Statistics (SS)
- Institute of Science Education (ISE)

ACADEMIC PROGRAMMES .....

- Institute of Olympiads IOO)
- Department of Mathematical Biology
- Department of Chemistry
- The Centre recently established an International Model Science Academy

ACADEMIC PROGRAMMES…

- Each school or programme department is headed by a Dean or Head, who are experienced Scientists and Professors. They are assisted by other senior academics like Senior Research Fellows, Resident Consultants and Courses organizers and supervisors.
- Each Academic School/Programme is charged with preparing and implementing approved academic activities through lectures, seminars, symposia, workshops, conferences and other teaching and learning strategies designed to achieve objectives of the Centre.

SCIENTIFIC ACTIVITIES

The Centre had since its inception, been organizing scientific activities in the mathematical sciences—Foundation Postgraduate Courses, Research Oriented Courses, Workshops, Conferences, etc., in order to improve the quality of education and research in the mathematical sciences. The aims of such activities include:-

i. Strengthening the postgraduate programmes of the Centre and the university system;

ii. Raising the numbers and qualities of postgraduate degrees produced from our universities system;

iii. Affording mathematical scientists both young and experience the opportunity have regular interactions at the Centre;

FOUNDATION POSTGRADUATE COURSES

iv. Increasing the volumes of high-quality scientific literature coming etc. providing rich pool of potential research supervisors for the young lecturers and research students;

v. Maximizing the use available expertise available in the mathematical sciences through the pooling together of such experts for teaching and organizing course that are otherwise not available in most of the Nigerian universities.

Some of the recent Foundation Postgraduate Courses, organized by the Schools of Mathematical Studies, Theoretical Physics and Mathematical Sciences Education include:

FOUNDATION POSTGRADUATE COURSES

Foundation Postgraduate Course on Probability Theory and Statistical Inference—Participants: 30

Research-Oriented Course (ROC): New Directions in Algebra and Geometry—25 participants

Introduction to K-Theory and Index Theory and their application Physics (26th June—7th July 2011)—Participants: 10.

Foundation Postgraduate Course on Parallel Algorithms—Participants: 15..

Capacity Building Workshop in Mathematical Analysis for Lecturers in Tertiary Institutions (18th September-1st October, 2011)—Participants: 36.

A Capacity Building Workshop for Mathematics/Statistics Educators (Lecturers) in Tertiary Institutions from 20th – 25th June, 2011—Participation: 168

Capacity Building Workshop in Mathematical Methods for Lecturers in Tertiary Institutions (11th September-18th September, 2011)—Participation: 58

FOUNDATION POSTGRADUATE COURSES

Foundation Postgraduate Course in Isomathematics and Computational Physics –Participation: 70

Foundation Postgraduate Course in Geomathematics and Computational Approaches using Python—Participants 70

Workshop on Mathematical Modelling and Simulation—Participants 17

International Conference on Mathematical Modeling and Simulation—Participants 17

These academic activities had largely increased the number of high and middle cadre personnel in Mathematical Sciences in our tertiary Institutions.

SCHOOL OF POSTGRADUATE STUDIES

One of the recent expansions in the training programme and capacity building initiatives of the National Mathematical Centre for lecturers in Tertiary Institutions was the introduction of the Joint Degree Programme (JDP) in the year 2006. This was within the framework of the Centre's Mandate to train and develop high-level Personnel in the Mathematical Sciences which includes Mathematics, Statistics, Computer Science and Theoretical Physics for Nigerians and African Institutions.

Following a rigorous planning and due process of the Curricula by the NUC and the selected collaborating universities, the Centre fulfilled the NUC requirements to start with the Postgraduate Diploma (PGD) and Master of Science degree in Financial Mathematics in collaboration with the University of Abuja. This specialized and essential Course was designed in an area not being offered in Nigerian Universities.

SCHOOL OF POSTGRADUATE STUDIES

The Centre in conjunction with the under listed Universities have planned to mount joint Higher Degree Programme in Applicable Mathematics aimed at training candidates for the award PGD, Masters or Ph.D Degrees in applicable Mathematics. The proposed participating Universities together with Courses for which they would award Degrees are as follows:-

- Abubakar Tafawa Balewa University, Bauchi:- Mathematical Ecology
- University of Jos:- Mathematics in Biomedicine
- University of Abuja: - Financial Mathematics
- Abubakar Tafawa Balewa University, Bauchi:- Modeling and Simulation in Engineering Problems
- Obafemi Awolowo University Ile-Ife:- Mathematics Education in Information, Communication Technology.
- Federal University of Technology Owerri:- Mathematics Education in ICT.

SCHOOL OF POSTGRADUATE STUDIES

The programme finally started on 12th March, 2007 for the 2006/2007 academic session. A programme aimed at advancing the Centre's objective of laying the foundation for national industrial and technological growth through producing high level manpower necessary for undertaking relevant research activities in specialized areas hitherto uncommon in the regular university system.

The 4th Matriculation Ceremony was held on 15th June, 2011 by the Vice-Chancellor of the University of Abuja and the Director-General of the Centre.

Indeed, the Centre is empowered to draw experts or group of experts from any part of the country or world for purpose of research, development and capacity building in Nigeria.

Objectives of the School of Post Graduate Studies

- To open areas for research work in the mathematical sciences by stimulating the enthusiasm of students in areas necessary for national development.
- To design, train and provide up-to-date academic materials in Nigerian Universities.
- This objective is beginning to yield the desired results by our initiative of 2007 in introducing the financial mathematics at postgraduate level for the first time in Nigeria.
- The University of Ibadan has started a new professional MSc. Degree in Financial Mathematics advertised in the national daily for the 2011/2012 academic session.

STUDENTS' POPULATION SINCE INCEPTION IS AS SHOWN BELOW.

ACADEMIC SESSION	INTAKE		TOTAL	REMARKS
	MSC DEGREE FINANCIAL MATHEMATICS	PGD FINANCIAL MATHEMATICS		
2006/2007	29	3	32	11 graduated
2007/2008	30	5	35	12 graduated
2008/2009	40	7	47	Presenting project seminars
2010/2011	41	8	49	On their research projects
2011/2012*	34	5	39	New Intake

ACHIEVEMENTS OF SCHOOL OF POSTGRADUATE STUDIES

- Enrolment of students has increased in quantity and quality.
- Academic programmes such as lectures, examination, seminar have been going own without interruption.
- The University of Abuja Senate has approved the final results of the first set of students.
- The second set of students has defended their thesis and has submitted bounded copies of their project for onward transmission to the postgraduate school.
- The third set of students is set for their seminar presentation and subsequently project defence.

MATHEMATICAL SCIENCES LIBRARY

The NMC library was established to combat the inability of many universities to provide relevant textbooks and learned journals required for adequate research. In this light, it attempts to meet the needs of researchers in the mathematical sciences from both within and outside the country.

Some of the strategies aimed at repositioning the Library in the years ahead include the following.

- Developing the Mathematical Sciences Library to cater for the diverse research interests nationwide as the only viable research library in the mathematical sciences in the country.
- Strengthening of the practice of publishing lecture notes in both electronic and book forms;

MATHEMATICAL SCIENCES LIBRARY

Mandatory production of Preprints by Scientists at the Centre (Resident and Visiting) from their research efforts at the Centre

Reviewed NMC Publications will be used as Gifts and Exchanges with similar bodies and institution, e.g. JNMS and Abacus. The Centre should take necessary steps towards strengthening the JNMS and Abacus for exchange. Furthermore, dormant exchange links should be revived and new ones established.

Mathematical Sciences Library's computerisation efforts—the Mathematical Sciences Library's computerization efforts involved the use of several applications software over time. The Library started with the use of dBase IV which was changed to Tinlib and then on to GLASS Library software. From Tinlib, the Library changed to Alice Library Soft link in 2004, and finally in October, 2009, the KOHA Integrated Library Management System, which is a LINUX, based Open Source software customized for its use. As at now over 2000 (two thousand) records of the catalogues have been entered.

MATHEMATICAL SCIENCES LIBRARY

Collection development—the Library has been able to acquire some current research materials for the Library and is processing the new additions, organizing them and providing access to the Library's collection.

Below is the statistics of new additions to the Library and other activities carried out in the Library

No. of Books Received	-	618
No. of Journals Received	-	271
No. of Loans	-	625
No. of Catalogue Entries	-	2000

NMC PUBLICATIONS

NMC has produced several instructional materials over the years. Some of the NMC products, which are the basic tools for the implementation of its Mathematics Improvement Programme (MIP), consist of:

i. Teaching Modules for Teachers—Primary 1,2,3,4,5,6;

ii. Teaching Modules for Teachers—JSS1,2,3; SS1,2,3;

iii. Workbooks for pupils—Primary 1,2,3,4,5,6;

iv. Workbooks for students—JSS1,23; SS1,2,3;

v. Mathematical Games for Primary Schools;

vi. Mathematical Games for Secondary Schools;

vii. Basic Concepts on Difficult Areas in Secondary School Mathematics;

viii. Basic Concepts on Difficult Areas in Secondary School Mathematics and Solutions to WASSCE and NECO SSCE Questions from 2000-2005;

NMC PUBLICATIONS

ix. Mathematics for Primary Schools—Primary 1, 2, 3, 4, 5, 6;

x. Mathematics for Secondary Schools—JSS 1,2,3; SSS 1,2,3

xi. The Whiz-Teacher (a device designed for ICT based teaching method)

xii. Primary and Secondary Mathematics Kits (P/SMK)

xiii. Teaching Modules for Primary 1-6 (2003)

xiv. Teaching Modules for Secondary School JSS 1 – SSIII (2003)

xv. Workbooks for Primary School 1-6 (2004)

xvi. Workbooks for Secondary School JSS1 - SSIII(2004)

NMC PUBLICATIONS

NMC scientific activities have since given rise to scientific literature in form of National Mathematical Centre, Abuja Publications. The following include some of the major high level publications of the Centre:

Lecture Notes on Cumulative Algebra 1992

Lecture Notes on Cumulative Algebraic K-Theory 1992

Proceedings of the National Mathematical Centre on Ordinary Differential Equation 2000, vol.1. No.1.

National Mathematical Sciences Summit and Annual Lecture 2000 Report

Lecture Notes Series Number 1—A Foundation Postgraduate Course in Algebra 2001

Lecture Notes Series Number 2—A Research Oriented Course in the Arithmetic of Elliptic Curves Groups and Loops 2001

Lecture Note Series Number 3—A Research Oriented Course in Topological Vector Spaces Non-locally Convex, Non-Archimedean 2001

Lecture Notes Series Number 4—A Foundation Postgraduate Course in Object-Oriented Software Design Introduction to C++ Programming 2001

NMC PUBLICATIONS

Lecture Notes Series Number 5—A Research Oriented Course in Semi Group Theory 2001

NMC Proceedings Workshop on Mathematical Modelling of Environmental Problem, 2005—available on www.nmcabuja.com/proceedings

NMC proceedings on conference on Mathematics of Computation and Application, 2005—available on www.nmcabuja.com/proceedings

NMC: A Day Seminar on Numerical Methods for Ordinary Differential Equations, 2006—available on www.nmcabuja.com/proceedings –these proceedings were mirrored in site in Sweden: emath.golonka.se/nmc proceeding.

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- The Proceedings of the First International Conference on Mathematical Modelling of Some Global Chalenging Problems in the 21st Century organised by NMC-COMSATS, 26 - 30 November, 2008. Editors: Samson Olatunji Ale, ET. AL.

COMPUTER SCIENCE LABORATORY

The Centre is committed to providing conducive environment to stuff, scientific visitors, and participants to enhance their productivity at the Centre.

In its efforts at creating awareness, stimulating, development and encouraging the production and uses of ICT tools and facilities in the Centre and Nigeria in general, the Centre has developed top class computing facilities which is serving as computer support for research projects undertaken by the Academic units of the Centre, visiting Mathematical Scientists and Course Lecturers/Participants. I

A new befitting Computer Laboratory building with a capacity to accommodate 100 users at a time had since been completed. The Laboratory is currently equipped with 100 Desktop Computer Systems, three Proliant Servers, several Laptops, projectors and scientific Software for both low and high level ac academic activities.

COMPUTER LABORATORY

Over the years, the Centre through the Computer Laboratory had successfully provided the following:

Provision of Computer Systems in the offices of all principal officers, heads of programmes, and all officers on HATISS 13 and above.

Designing of a befitting, attractive and user-friendly website that will not only supply detailed information about the Centre and its activities, but will also be linked to the websites of Mathematical association/institutes.

Installation of wireless Local Area Network across the campus.

Provision of ICT facilities like video conferencing, digital camera, software, database capture mechanism, and adequate staffing.

Efficient functioning of internet connectivity at the Centre at all times.

Taking necessary steps towards ensuring uninterrupted power and water supply.

INTERNATIONAL OLYMPIADS

A programme designed to help students acquire critical thinking skills and also to introduce them to the role of mathematics and science in day to day human endeavour. It also encourages the students to develop a passion for mathematics and the sciences and consider a career in these disciplines at an early stage.

Nigerian students have been performing creditably well. Nigeria got her first Medal in the 55 year-old International Mathematical Olympiad in 2010 and 2011. She also received another first medal (Bronze) in International Physics Olympiads in 2011 and several honorable mentions. Clearly Nigeria's name is already academically being recognized through these activities globally, and we are also baking future scientists.

In year 2011, there were training programmes of students in Mathematics, Physics, Biology, Chemistry and Informatics between 8th – 10th May, 2011, and based on the training, the following students were selected to represent the Country for the 2011 International Olympiads as follows:-

OLYMPIADS

1. **IMO 2011**

HOST COUNTRY: NERTHELAND

DATE 13TH – 24TH JULY, 2011

S/N	NAME	STATE	SCHOOL	REMARK
1.	Onah Pius Aje	Benue	Mt. St. Gabriel Sec. Sch. Makurdi	Contestant 1
2.	Henry Aniobi	FCT	NTIC, Abuja	Contestant 2
3.	Vincent Anioke	FCT	NTIC, Abuja	Contestant 3
4.	Awolabi Adebola	FCT	Regina Pacis, Abuja	Contestant 4
5.	Okafor Jaachinma	FCT	Regina Pacis, Abuja	Contestant 5
6.	Awe Olusanya	Ogun	Christ the King Coll. Odo-Lewu	Contestant 6

OLYMPIADS

1. **IPHO 2011**

HOST COUNTRY: THAILAND

DATE 10TH – 17TH JULY, 2011

S/N	NAME	STATE	SCHOOL	REMARK
1.	Jesuoluwajoba Ademehin	Ondo	Oyemekun Gram. Sch. Akure	Contestant 1
2.	Musa Damina	Kaduna	NTIC, Kaduna	Contestant 2
3.	Aoydeji Bode-Oke	FCT	NITC, Abuja	Contestant 3
4.	Folami Samon	Osun	Agbonran Sch. Pof Sci. Ede	Contestant 4
5.	Ayomide Bamidele	FCT	NTIC, Abuja	Contestant 5

OLYMPIADS

1. **IBO 2011**

HOST COUNTRY: CHINESE TAPEI

DATE 10TH – 17TH JULY, 2011

S/N	NAME	STATE	SCHOOL	REMARK
1.	Victor Bindir	Kogi	Aieka Academy Anka	Contestant 1
2.	Igbinigie Jesuferanmi	Ondo	Model Ec. Sch. Akure	Contestant 2
3.	Adewale Opeoluwa	Ondo	Halmark Sec. Sch, Ondo	Contestant 3
4.	Ayomide Bamidele	Delta	D.S.C Tech. Hight Sec. Warri	Contestant 4

OLYMPIADS

1. **IBO 2011**

HOST COUNTY: THAILAND

DATE 22ND – 29TH JULY, 2011

S/N	NAME	STATE	SCHOOL	REMARK
1.	Yahaya Bindir		NTIC, Abuja	Contestant 1
2.	Etibo Aghogho	Delta	D.S.C Tech. High Sc. Warri	Contestant 2
3.	Alexander Benjamin		Sacred Heart Min Sem J/Yinu	Contestant 3
4.	Salih Abdullahi	Niger	New Horizons Coll Minna	Contestant 4

NIGERIAN NATIONAL MATHEMATICS COMPETITIONS

In pursuit of the mandate to design appropriate initiatives for high quality capacity building of the next generation of Nigerian Mathematicians, the Centre, through the School of Mathematical Studies had organized the 3rd Annual National Mathematics Competition for Universities Students in Nigeria (NAMCUS 2011) had been held from 6th—12th February 2011—Participation: 11 Universities; 72 students. Each participating University presented a team of four final year students and a team leader (lecturer) at the Contest.

The 1st Annual National Mathematics Competitions for Colleges of Education and Polytechnics Students NMCCES/NMCPS 2011were held from 20th-24th February and 1st-4th March 2011 respectively —Participation: 20 Colleges of Education with 44 contestants and 16 Polytechnics with 41 contestants .

BIOMATHEMATICS DEPARTMENT

A programme designed to handle the training facility for the National and International Biology Olympiads, and also saddled with workshops on long term plan for talent hunt for the International Biology Olympiad competition, and development of curriculum for schools, namely:-

Biomathematics Curriculum

Mathematical Ideas in Biology

Mathematical Ecology

Biomathematics of Sport

Biomathematics in Health for Public Health workers, Community Health workers, Nurses and Doctors

Mathematical models as tools for control of infectious diseases

BIOMATHEMATICS

The Department is also involved in the development of Biology practical skills and specimen production which has an in-exhaustible market in Ecological practical design and conservation skill; laboratory specimen's technique: encapsulation, glass lamination, taxidermy, etc.; Entomology specimens preparation; Parasitological Specimen's Preparation, Histological (slide preparations), and A Certificate course in Biology Entrepreneurship for Youths.

- *Some Achievements from the Department*

Questions and answers textbooks in Biology are now ready;

The Biology Improvement Teaching Modules are ready;

Linkage with Department of Biomathematics, University of California, Los Angelis ;

Linkage with Bio-Mathematics Research Centre, University of Canterbury, New Zealand.

International Journal of Biomathematics to be subscribed to the Library was received. The name is International Journal of Biomathematics.

Communication on the scheduled Biology practical skills development in youth's workshop was on. It is coming up in third week of November.

INSTITUTE OF SCIENCE EDUCATION

The Mathematics Education Programme and the Mathematics Improvement Project (now School of Mathematical Sciences Education and Institute of Science Education) aim at improving the teaching and learning of mathematics, especially, at the lower level of the Nigerian Education System. The two departments have the following responsibilities:-

- identifying and encouraging young talents in mathematical sciences;
- stimulating enthusiasm for the physical sciences in young Nigerian students and scholars;
- preparing Nigeria for a leading role in the Mathematical Sciences;
- encouraging and support activities leading to the improvement of teaching and learning of mathematical sciences at all levels.

These Departments pursue their responsibilities through various strategies, which include use of new teaching methodologies, visitation to schools, courses and workshops, national incentive scheme, popularization of mathematics, printing of workshop proceedings, production of mathematical games and teaching modules/students workbooks.

INSTITUTE OF SCIENCE EDUCATION

- ACHIEVEMENTS

For the past five years, the Centre has vigorously pursued this mandate with the goals of achieving the following:

- Revitalizing the Incentive Scheme under which the centre awards incentives (partial scholarships, etc.) to deserving pupils and students/teachers at the primary/secondary schools and tertiary institutions.
- Provision of mathematical games for use in our primary and secondary schools to stimulate enthusiasm and sustain interest for the physical sciences in young Nigerian students and scholars.
- Retraining mathematics teachers through workshop activities using NMC germane instructional materials (teaching modules, students' workbooks, models, games, charts, etc.) on a fairly regular basis.

INSTITUTE OF SCIENCE EDUCATION

- Ensure effective monitoring and evaluation of MIP programmes throughout the 12 MIP activated MIP States across the country. These include: Katsina, Plateau, Ondo, Zamfara, Kogi, Gombe, Yobe, Ekiti, Enugu, Oyo, Bauchi, and the FCT, Abuja.
- Initiated and produced textbooks (based on MIP field work experience) that has simplified the mathematics concepts students or teachers perceived to be difficult.
- Publish the progress reports on MIP activities and eventually determine whether students' failure in mathematics has been subsided or arrested.
- Expansion (Inter) of MIP to all States of the Federation (The awareness of MIP to all States using JCCE and NCE meetings).
- Using ICT exemplified in NMC instructional materials, like, Teachers Wiz kits, CDs in teaching different mathematics concepts in a simplified version.

CLASSICAL MENTAL ARITHMETIC

Since 2009, the Centre had been organizing Training Workshops on Classical Mental Arithmetic (CMA) and Universal Concept Mental Arithmetic System (UCMAS). These are some of the initiatives of the Centre to encourage young Nigerians to love Mathematics. The CMA and UCMAS are concepts which improve participants' intelligence and memory through the use of Abacus—the ancient tool for Chinese arithmetic calculations. The concepts have the benefits of:-

- Enhancement of mathematical skills and intelligence
- Sharpening the power of focus, concentration and memory
- Enhancing self-confidence, thinking skills and creativity
- Boosting imaginative powers and responses/reflexes and
- Ensuring a child's balance development with high IQ/EQ among other

MENTAL ARITHMETIC

The CMA and UCMAS have gained commendations from everybody and the Nigerian National Assembly has keyed into it and has asked the Centre to expose their wards to such trainings which will soon commence.

The Centre had organized the Workshops for Primary School Pupils and Junior Secondary Students and Teachers on Total Brain and Character Development (NMC Mental Arithmetic): 15th March-7th April, 2010—Participants: 21. 20th-21st March 2011—Participants: 92 Primary School Teachers from Plateau State.

RESEARCH FACILITIES

- The research facilities departments in the Centre are the Computer Laboratory, the Library and the Mathematical Laboratory.
- They serve as resource centres to national and international communities; as a focal point for advanced research and training in mathematical sciences and applications.
- The Federal Government of Nigeria has signaled its intention to provide funds for up-to-the-minute equipment and qualified personnel for quality research efforts at the Centre.

RESEARCH ACTIVITIES

The activities here include: Writing proposals to source funding for Scientific Activities, including JDP, Olympiads, from appropriate Agencies, e.g., Ministry of Science and Technology, World Bank, National Action Committee on Aids, Raw Material Research and Development Council, Banks, Insurance Companies, etc.,

For this purpose, we already have a Research and Development Committee for the Mathematical Sciences and Olympiad at the Centre expected to mobilize the scientific members of the Centre to generate strong research proposals for funding. These proposals are being forwarded to the appropriate funding agencies. This Committee would also propagate Centre's expertise to Nigerian, African, and International Communities.

ON GOING RESEARCH ACTIVITIES

The NMC-RMRDC endorsed an annual research grant to two beneficiaries on mathematics modeling of equipment for processing Raw materials since 2007. The candidates for the grant must present a viable and feasible project proposal that would be assessed by experts and recommendation made to the NMC-RMRDC Project implementation Committee (PIC). The awardees are:-

Dr. S. E. Ogbeide (UNIBEN)—topic: Mathematical Modelling for Oil distillation Unit for Processing Essential oil for Ginger and Lemon Grass

Professor J. C. Igbeka (UNIBADAN)—topic: Mathematical Modelling of Screw Press.

The first set of awardees had since 2008 completed the projects .

ON GOING RESEARCH ACTIVITIES

The second set of three Awardees had been given the grants. They are:-

- Engr. Dr. Mrs. Taiwo Ademiloyi (Rivers State University of Science and Technology)—topic: Mathematical Modelling for Design and Fabrication of Cassava Drying Rotary Dryer.
- Nwankwojike, N. Bethran (University of Agriculture Umudike)—topic: Mathematical Modelling of Palm Nut-Pulp Seperator surface Analysis.
- Dr. Olufemi A. Adekoya (Obafemi Awolowo University Ile Ife)—topic: Mathematical Modelling of Communution by Hammer Mill

Seminar presentations were organized for the above named 2010/2011 NMC/RMRDC awardees of the Mathematical Modeling of Processing Equipment on May 19th, 2011. at the Centre.

ON GOING RESEARCH ACTIVITIES

- *Postdoctoral Fellowship*

i. Some postdoctoral fellowships had been advertised for 2011 in the area of Pure and Applied Mathematics.

ii. Some Visiting Professors were appointed and the Professors in the Centre are expected to oversee the fellowship programmes in these directions.

iii. The Implementation Committee of the NMC/RMRDC grant are in the process of advertising the 2010 grant.

iv. The researches in the proposed developmental plans are to continue and the Centre seeks collaboration with other centres in COMSATS to implement the developmental projects.

COLLABORATION

The International Centre for Basic Research (ICBR) signed a Memorandum of Understanding (MOU) with the National Mathematical Centre and had jointly ran the International Seminars on Theoretical Physics and National Development (ISOTPAND) since 2009 under public and private Practice (PPP) arrangement.

The Centre and the African Journal of Physics based at the North Carolina University had also signed a Memorandum of Understanding (MOU) for the purpose of publication of the ISOTPAND proceedings and other publications of Interest in the African Scientific Network Forum.

COLLABORATION

ISOTPAND is an annual event designed to honour accomplished scientists that have contributed to propagating science in Africa and also a forum for bringing together senior researchers and eager beginners from within and outside Africa.

The first three series of ISOTPAND (2009, 2010 and 2011) had been very successful. A one-week Foundation Postgraduate Course (FPC) had since been included. More participants are expected at ISOTPAND 2012 from within and outside the continent and the invited speakers have been selected to cover several fields.

The proceedings of ISOTPAND 2008 and 2009 had already been published. The papers presented at the ISOTPAND 2010 after rigorous peer review process had been also selected and published in African Journal of Physics. (http://sirius-c.ncat.edu/asn/ajp/allissue/index.html)

COLLABORATION

Workshop and International Conference on Mathematical modeling : 1-15 Dec 2011

i. The Workshop on Mathematical Modelling and Simulation: 1-10 Dec 2011 – Resource persons: Prof. R.O.Ayeni, LAUTEC, Ogbomoso; Prof. B O Oyelami, NMC Abuja; and Prof. S O Enibe,UNN,Nsukka

The workshop covered several areas of Mathematical Modeling in Finance, Engineering and Biomedicine with Laboratory sessions using MATHLAB and SCILAB software. Seventeen (17) participants took part in the Workshop.

ii. International Conference on Mathematical Modeling and Simulation (13-15 Dec 2011)- Several papers were presented . They are being refereed for consideration publication in the National Mathematical Centre journal as special issue.

INTERNATIONAL COOPERATION

- The Management of the Centre has continued to strengthen its relationship with relevant international institutions through exchange programmes and students.
- Currently, a Researcher from the Centre was nominated to undergo a 4-year Ph.D training programme in a University in Switzerland under a special student exchange arrangement sealed with a Memorandum of Understanding (MOU) signed with Uppsala University Sweden. Plans have reached advanced stage to send more researchers for various training programmes in some other countries including Sweden before the end of the year 2012.

INTERNATIONAL SCIENTIFIC COMMITTEE

- The recently constituted high powered International Scientific Committee (ISC) to monitor and advise the Academic Board and the Government Council of the Centre on the formulation and evaluation of its academic programmes/activities will hold its second meeting before the end of the year 2012.
- It is expected that the next meeting of ISC, which is headed by Professor Phillip Griffiths, former Director, Institute of Advanced Study, Princeton, NJ, USA and Prof. Sam. O. Ale as the Deputy Chairman, will enjoy the presence of the President of the Federal Republic of Nigeria.
- Other international members of the Committee from TWAS, Encyclopedia of Mathematics, Amsterdam; the African Mathematical Union among others would be expected.

2012 MATHEMATICAL YEAR OF NIGERIA

In our efforts to fulfil one of the mandates of the National Mathematical Centre Abuja, i.e. to stimulate enthusiasm for the physical sciences in young Nigerian students and scholars, the Management of the Centre in collaboration with the Nigerian Federal Ministry of Education, had recommended last year that the year 2012 be declared Nigeria Mathematical Year.

This event was flagged off by the President, Commander-in-Chief of the Armed Forces of the Federal Republic of Nigeria, Dr. Goodluck Ebele Jonathan GCFR, on 1st March 2012, at an occasion that enjoyed the presence of some State Governors, Honourable Ministers, Senators, Honourable Members of the House of Representatives, Professors of high repute, staff and students of various universities, secondary schools, and of course, the National Mathematical Centre Abuja.

2012 NIGERIA MATHEMATICAL YEAR

Nigeria Mathematical Year has therefore been set aside or dedicated to:

1. Create awareness and draw attention to the importance of mathematics in National development.
2. Domesticate, demystify and develop a culture of love for the subject on Nigeria.
3. Point out the grossly inadequate number of competent mathematicians and mathematics teachers in the country.
4. Correct and change the opinion that the pursuit of mathematics does not lead to attractive career possibilities.
5. Identify and develop talented and promising young mathematicians as well as popularizing the discipline.
6. Properly position mathematics for industrial and technological breakthrough as it has been done in developed countries like China, India and Germany.

2012 MATHEMATICAL YEAR OF NIGERIA

Some of the activities lined up to mark this unique event, which will continue for the rest of the year include:

TERTIARY INSTITUTIONS COMPETITIONS

A programme designed to produce high quality future Mathematicians and Scientists for Nigeria.

CLASSICAL MENTAL ARITHMETIC (CMA)

A programme where abacus is used in calculation and mental development as an effective tool for the development of the brain through the teaching and learning of mathematics across the country would be revived. It has been discovered that the best way of developing the brain is to stimulate the functions of both hemisphere simultaneously by pondering and training.

2012 NIGERIA MATHEMATICAL YEAR

MR. PRESIDENTS FAVOURITES (MPF) CONTEST.

A programme designed to help students acquire critical thinking skills and also to introduce them to the role of mathematics and science in day to day human endeavour.

Competitive incentive schemes, as a strategy to further encourage and popularize mathematics and the sciences at the intermediate level of our education strata are planned for the year.

MATHEMATICS QUEEN SELECTION

Mathematics competitions for the girl students of mathematics in Nigeria will be conducted, where participants will be expected to strive to qualify from the Local Government level to State Level and finally the national level.

2012 NIGERIA MATHEMATICAL YEAR

PROFESSOR SOLVE THIS! (A Television Programme)

A method of stimulating interest in Mathematics. It will be a television programme where mathematical problems will be solved. The problems shall be in various aspects of mathematics. A Professor shall take 30 minutes to solve problems and 30 minutes shall be allotted to phone –in or Questions from the public.

MASS PRODUCTION AND DISTRIBUTION OFMATHEMATICS

BOOKS AND MATHEMATICS MADE EASY PROJECTS

The Centre has developed Teaching Modules for the preparation and development of effective and efficient teaching of mathematics in schools. This new teaching methodology addresses the problems of what to teach in and how to teach mathematics in Nigerian schools.

PRODUCING QUALIFIED MATHEMATICS TEACHERS FOR

NIGERIAN SCHOOLS

A programme designed for popularizing and improving the teaching and learning of mathematical sciences at all levels of the educational system. Accordingly, several workshops for mathematical sciences education teachers and Inspectors are to be conducted with the goal of strengthening the base for mathematical sciences and for developing initiatives for the improvement of education in mathematics and mathematical sciences.

PARADOXES & FALLACIES IN MATHEMATICS

A paradox is a true statement (or group of statements) that leads to contradiction and the puzzling results can be rectified by demonstrating that one or more of the premises are not really true.

2012 NIGERIA MATHEMATICAL YEAR

FORMATION OF MATHEMATICS CLUBS IN SCHOOLS

A programme to re-introduce and revive Mathematical clubs in all schools in Nigeria with a view to popularizing mathematics. Manual for activities, operations and benefits of mathematical clubs would be mass-produced and distributed to schools. Retraining workshops would be organized for the school teachers.

POPUARIZATION OF MATHEMATICAL GAMES

A programme on a new idea of teaching and learning of mathematics through games, developed to supplement the traditional method of teaching and learning of mathematics through the chalkboard method. The mathematical games simplifies the teaching of mathematical concepts to enable students spend more quality time solving mathematical sciences problems. The games are designed to arouse interest and motivate students in the learning of mathematics.

2012 NIGERIA MATHEMATICAL YEAR

NMC e-MATHEMATICS TEACHERS' PROJECT

It is a production and collaboration of both the school of mathematics and computer school. It will be deployable to both cities and remote places. It covers all levels of mathematics.

MATHEMATICS SUMMITS AND EXPO (EXHIBITION)

The summit topic (theme) is "Mathematical Sciences as a tool for repositioning science and technology for vision 202020". The summit will be the high point of the mathematical year and it will provide a platform for the scientific community to brainstorm and evolve strategic templates for the actualisation of vision 202020.

2012 NIGERIA MATHEMATICAL YEAR

SCIENTIFIC COMPUTING IN MATHEMATICS

This activity focuses on high level mathematics with emphasis on the areas that are active in scientific computing namely:

i) Numerical analysis

ii) Modelling

iii) Optimization and operation research

iv) Statistical Computing.

MODELING RESEARCH IN MATHEMATICS PROJECT

Modeling, Research in Mathematics project will be actively pursued during the Mathematical Year with all stakeholders from the academia and industry, among others. The NMC would henceforth call for proposals from universities to jointly organize workshops/conferences at the Universities/Centre under this project.

2012 MATHEMATICAL YEAR OF NIGERIA

The 2012 National Workshop on Mathematics, Key, to National Transformation: The Role of Nigerian Local Governments was held on 8th May, 2012 at the International Conference Centre, Abuja, Nigeria. The Workshop activities included the following:

i. To provide the participants a breath of knowledge and skills required to carry out their responsibilities effectively and efficiently most especially in the area of management of resources of Local Governments;

ii. To enable the participants develop strategies, ideas and logistics that will assist them in managing the Universal Basic Education (UBE) programmes at the Local Government Level;

iii. To reawaken Mental Arithmetic as a tool for initializing Mathematics and Science application for grassroot technological transformation;

iv. To propose mathematical sciences educational curriculum that would promote national transformation of the Local Government Areas;

v. To enlighten the participants on how they can use e-government for administration at Local Government level;

vi. To discuss among other things the strategies of moving the Local Governments forward so that they can take their rightful position in the comity of Local Governments.

WORKSHOP FOR LOCAL GOVERNMENTS

The organization of such workshops is one of the strategies we have employed in the 2012 Mathematical Year of Nigeria as a wake-up call for the Local Governments to collaborate with the Centre in promoting the national transformation, development and socio-economic impact of mathematical sciences in the Local Government Areas.

A cardinal objective of the Centre is to encourage and support activities leading to the improvement of the teaching and learning of the mathematical sciences at all levels of Nigerian educational strata with a view to generating capacity in the diverse areas of the mathematical sciences.

MATHEMATICAL YEAR OF NIGERIA

The 2012 Nigeria Mathematical Year is aimed at addressing the problem of apparent loss of pupils' interest in mathematics due to the perceived difficulty of the subject, stimulating and developing interest of students in mathematics and the popularization of mathematics among our youth of today.

The above mentioned programmes are crucial to the success of the 2012 Nigeria Mathematical Year. This is because an event like this is expected to engender a long-lasting impact on the participants, students of mathematics and indeed Nigerians in all fields of endeavour. Happily enough, today Nigeria is celebrating its first Mathematical Year this year to the glory of God and the benefits of our people.

CHALLENGES

Running Courses, Workshops, Conferences, Lectures and the maintenance of the mathematical sciences Library and the Computer Laboratory at appropriate levels for research are the main avenues by which the Centre seeks to fulfil its mandate.

For now, locally based mathematical scientists are pooled together to give viable Foundation Postgraduate and Research Oriented Courses at the Centre.

The Centre is soliciting for funds for Sponsorship of the Resource Persons at Scientific courses, Conferences and Workshops; Endowment of Professorial chairs.

CHALLENGES

COMSATS is requested to come to our aid to run and invite Keynote speakers to our forthcoming activities:

Workshop on Mathematical Modeling and Simulation .

International Conference on Mathematical Modeling and Simulation.

- **COMSATS INVITED TO:**
- ASSIST THE CENTRE TO SOURCE FINANCIAL SUPPORT FROM WORLD DONORS AND WORLD BANK

CHALLENGES

- (including other organizations such as the African Development Bank, UNESCO, African Mathematics Millennium Science Initiative, the Gates Foundation, National Science Foundation, USA as well as attract industrial funds.
- **COMSATS TO:**
- Support and promote special academic relationships, partnership and collaboration between the National Mathematical Centre and identified Research Centres, Universities and other relevant bodies and institutions;

CHALLENGES

COMSATS to assist the Centre attract the best mathematical scientists in the world to visit, collaborate and train students in Nigeria.

COMSATS to assist the Centre in bringing together renowned mathematicians to participate in its Special Joint Degree Programme to achieve its central objective of making Nigeria a truly international Centre for Research and Training in the mathematical sciences.

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THANK YOU