

# THE NELSON MANDELA AFRICAN INSTITUTION OF SCIENCE AND TECHNOLOGY (NM-AIST)



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## INVITATION OF APPLICATIONS FOR ADMISSION TO MASTER'S AND PhD PROGRAMMES FOR 2016/17 ACADEMIC YEAR

### 1.0 BACKGROUND

The Nelson Mandela African Institution of Science and Technology (NM-AIST) in Arusha, Tanzania is one in a network of Pan-African Institutions of Science and Technology located across the continent. These institutions envision training and developing the next generation of African scientists and engineers with a view to impacting, profoundly, on the continent's development through the application of Science, Engineering and Technology (SET).

The NM-AIST, which is accredited by the Tanzania Commission for Universities (TCU) is a research intensive institution for postgraduate and post-doctorate studies and research in SET. Its mission is to produce: (1) top-notch SET academics for Higher Learning Institutions; (2) competent researchers for Research and Development (R&D) Institutions; and (3) technopreneurs, industry captains and innovations managers for stimulating, catalyzing and promoting business start-ups and growth of the local Industry. The training, therefore, incorporates appreciable doses of relevant business studies and humanities ingredients designed to develop attributes that will enable graduates become better scientists and engineers for the society and industry.

The Goal of NM-AIST is to catalyze the development of world-class SET through the production of high quality scientists and engineers in Eastern Africa to stimulate, catalyze and promote economic growth and employment creation. Pursuant to this goal, the objective of NM-AIST is to educate the next generation of African scientists and engineers by equipping them with the technical, entrepreneurial and leadership capacities to solve African problems thereby contributing to the economic and social transformation of sub-Saharan Africa. More information on NM-AIST is available on the website: [www.nm-aist.ac.tz](http://www.nm-aist.ac.tz).

### 2.0 PROGRAMMES AND AREAS OF SPECIALIZATION

The NM-AIST hereby invites applications from suitably qualified candidates for admission to pursue various Master's or PhD programmes. Programmes on offer this and next academic year including the areas of specialization are shown overleaf:

**Table 1: Degree Programmes and Specializations**

<b>School</b>	<b>Degree Programme</b>	<b>Area of Specialization</b>
<b>Life Sciences and Bio-Engineering (LiSBE)</b>	(i) Master's in Life Sciences	Health and Biomedical Sciences
		Sustainable Agriculture
	(ii) PhD in Life Sciences	Food and Nutritional Sciences
		Biodiversity and Ecosystems Management
	(i) Master's in Bioengineering	Bio-product Development
		Vaccines and Diagnostics
	Master of Science in Public Health Research	Determinants of Health and Diseases
		Intervention Research
Implementations and Health Systems Research		
<b>Computational and Communication Science and Engineering (CoCSE)</b>	(i) Master's in Mathematical and Computer Science and Engineering	Applied Mathematics and Computational Science
		Computer Science and Engineering
	(ii) PhD in Mathematical and Computer Science and Engineering	Information Technology Systems Development and Management
		Electronics and Telecommunications Engineering
	(i) Master's in Information and Communication Science and Engineering	Structural Materials
		Energy Materials
<b>Materials, Energy, water and Environmental Sciences (MEWES)</b>	(ii) PhD in Materials Science and Engineering	Sustainable Power Generation and Energy Utilization
		Sustainable Renewable Energy Engineering
	(ii) PhD in Sustainable Energy Science and Engineering	Sustainable Nuclear Power Engineering
		Hydrology and Climate Studies
	(i) Master's in Hydrology and Water Resources Engineering	Water Resources Engineering
		Irrigation Engineering
	(ii) PhD in Hydrology and Water Resources Engineering	Water Supply and Sanitation
		Environmental Science
	(i) Master's in Environmental Science and Engineering	Environmental Engineering
		Environmental Engineering

### 3.1 ENTRY REQUIREMENTS

#### 3.2 Admission to Master's Programmes

To be admitted to Master's programmes at NM-AIST, candidates shall meet the minimum requirements as stipulated below:

##### 3.2.1 Master's by Coursework and Dissertation

- (i) Possess a Bachelor's degree from an accredited university or similar institution of higher learning with GPA of at least 3.0/5.0.
- (ii) Candidates that hold unclassified degrees (e.g. MD, BVM and DDS) shall have at least an overall of "C" grade and an average of "B" grade in the relevant subject or field of his/her specialization.
- (iii) Satisfy the programme and specialty specific requirements as specified by the School/Department hosting the programme in section 3.5 below.

### **3.2.2 Master's by Research and Thesis**

- (i) Possess a Bachelor's degree from an accredited university or similar institution of higher learning with GPA of at least 3.5/5.0.
- (ii) Demonstrate ability to undertake research by either providing evidence of at least ONE year working experience in a research group/environment or at least ONE publication in an accredited peer-reviewed journal as the FIRST or SECOND author.
- (iii) Submit along with application documents, a concise ONE-page concept note of what he/she wishes to research on as part of the study in order to demonstrate his/her ability to organize thoughts in writing, logically and creatively.
- (iv) Be ready to pursue prescribed skills and capacity enhancing courses which are offered to all Master's students at NM-AIST as common core courses and as may be commended by the supervisors, to enhance research performance. The courses may be taken flexibly during the duration of the programme but MUST be successfully completed before graduation.

### **3.3 Admission to PhD Programmes**

To be admitted to PhD programmes at NM-AIST, candidates shall meet the minimum requirements as stipulated below:

#### **3.3.1 PhD by Coursework and Dissertation**

- (i) Possess a Bachelor's degree from an accredited university or similar institution of higher learning with GPA of at least 3.0/5.0.
- (ii) Possess a Master's degree from an accredited university or similar institution of higher learning with a minimum GPA of 3.5/5.0 and least an average of "B" in the relevant subject or field of specialization.
- (iii) Satisfy the programme and specialty specific requirements by the School/Department hosting the programme as specified in section 3.5 below.

#### **3.3.2 PhD by Research and Thesis**

- (i) Possess a Bachelor's degree from an accredited university or similar institution of higher learning with GPA of at least 3.5/5.0.
- (ii) Possess a Master's degree from an accredited university or similar institution of higher learning with a minimum GPA of 3.5/5.0.
- (iii) Demonstrate research experience by either producing evidence of at least TWO publications in accredited peer-reviewed journals, being the FIRST author in ONE publication and FIRST or SECOND author in the second publication, or produce evidence of a patent/prototype emanating from his/her research/innovation work and/or being PI or Co-PI in a funded research project with a PhD training component.
- (iv) Submit along with application documents, a concise TWO-page concept note of what he/she wishes to research on as part of study in order to demonstrate his/her ability to organize thoughts in writing, logically and creatively.
- (v) Be ready to pursue prescribed skills and capacity enhancing courses which are offered to all PhD students at NM-AIST as common core courses and as may be recommended by the supervisors to enhance research performance. The courses may be taken flexibly during the duration of the programme but MUST be successfully completed before graduation.

### 3.4 English Proficiency

Since English is the primary language of instruction, all applicants seeking admission to academic programmes at NM-AIST must possess adequate knowledge of written and spoken English as a prerequisite for admission. This demonstration may take one of the following forms:

- (i) Successful completion of a baccalaureate degree from a recognized university or similar institution of higher learning where English is the language of instruction.
- (ii) Successful completion of a postgraduate degree programme at a recognized university or similar institution of higher learning where English is the language of instruction.
- (iii) Submission of official results of the Test of English as a Foreign Language (TOEFL) with a paper-based score of 550 (or higher), computer-based score of 213 (or higher) or Internet-based with a score of 80 (or higher).

### 3.5 Academic Transcripts and Certificates

Candidates who have been awarded Bachelor's and/or Master's degrees at accredited universities or similar institutions of higher learning which issue academic documents in languages other than English shall submit notarized English translations of all supporting documentation including, but not limited to, transcripts, degrees, and diplomas.

The academic levels or equivalence of the qualifications obtained from foreign institutions must be authenticated by the Tanzania Commission for Universities (TCU).

### 3.6 Programme Specialty Requirements

For all science based programmes, students possessing Advanced Level Certificate of Secondary Education (ACSE) must have at least TWO principal passes in sciences subject or at EGM combination level. The specific entry requirements for each programme specialty stipulated by the host Schools/Departments at NM-AIST are shown below.

**Table 2: Areas of Specialization and their Specific Entry Requirements**

School of Life Sciences and Bioengineering (LiSBE)		
Degree	Specialization	Prerequisite Degree Courses
Life Sciences (LiSe)	Health and Biomedical Sciences	Veterinary Science or Medicine (BVSc, BVM, DVM); Human Medicine (MD); Biomedical Sciences; Clinical Sciences; Animal Science; Microbiology; Molecular Biology; Biotechnology; Physiology (Medical or Veterinary), Pathology (Medical or Veterinary ); Immunology (Medical or Veterinary ); Parasitology; Zoology and related fields.
	Sustainable Agriculture	Agriculture; Crop Science; Biology; Horticulture; Agronomy; Plant Pathology; Biology; Genetics; Biotechnology; Botany and Forestry; Agricultural Economics; Crop Pathology, Agricultural Education and Extension; Agro-ecology, Botanical Science; Range Management and related fields.
	Food and Nutritional Sciences	Food Science; Home Economics and Human Nutrition; Food Technology; Biochemistry; Clinical Nutrition; Dietetics; Child and Maternal Care; Food Biotechnology; Functional Food; Food Development; Food Safety; Food quality and Safety and related fields.
	Biodiversity and Ecosystems Management	Ecology and Biodiversity; Wildlife Science and Conservation; Conservation Biology; Forestry; Silviculture; Aquaculture; Evolutionary Biology; Tropical Biodiversity and Wildlife Management; Organic Chemistry; Microbiology; Agro-ecology; Animal Science; Population Biology and related fields.

<b>School of Life Sciences and Bioengineering (LiSBE)</b>		
<b>Degree</b>	<b>Specialization</b>	<b>Prerequisite Degree</b>
<b>Bio-Engineering (BioE)</b>	Bioproduct Development	Food Science; Biochemistry; Bioengineering; Biotechnology; Mechanical or Electrical Engineering; Chemical Engineering and related fields.
	Vaccines and Diagnostics Development	Molecular Biology; Microbiology; Biotechnology; Bioinformatics; Biological Science; Biotechnology and Laboratory Sciences; Biomedical Technology, Chemical Engineering; Mechanical or Electrical Engineering and related fields.
<b>Master of Science in Public Health Research (MScPHR)<sup>1</sup></b>	Determinants of Health and Diseases	Social Sciences (Sociology, Anthropology), Environmental Sciences, Doctor of Medicine, Veterinary Science/Medicine, Human Nutrition Sciences, Statistics, Biology, Informatics and related fields
	Intervention Research	Statistics, Doctor of Medicine, Veterinary Science/Medicine, Environmental Sciences, Human Nutrition Sciences, Biology and related fields
	Implementations and Health Systems Research	Social Sciences, Doctor of Medicine, Environmental Sciences, Health System Management, Economics, Statistics, Informatics and related fields

<b>School of Computational and Communication Science and Engineering (CoCSE)</b>		
<b>Degree</b>	<b>Specialization</b>	<b>Prerequisite Degree</b>
<b>Mathematical and Computer Science and Engineering (MCSE)</b>	Applied Mathematics and Computational Science	<b>Mathematic; Applied Mathematics and related fields</b> <b>In addition to the above, Mathematics; Applied Mathematics and related fields</b> <b>A student to be admitted in Master's or PhD in Applied Mathematics and Computational Science Specialty, shall be required to have at least 2 Principal passes of which one shall be from Advanced Mathematics in Advanced Level Certificate of Secondary Education. The students must also have taken Mathematics or Statistics at the Bachelor degree.</b>
	Computer Science and Engineering	<b>Computer Science; Software Engineering; Informatics; Information Technology; Computer Engineering, or related fields</b>
<b>Information and Communication Science and Engineering (ICSE)</b>	Information Technology Systems Development and Management	<b>Information Systems; Information Technology; Informatics; Computer Science; Software Engineering; Computer Engineering, or related fields</b>
	Electronics and Telecommunication and Engineering (ETE)	<b>Telecommunications Engineering; Electronics Engineering; Electrical Engineering; Computer Networks, or related fields</b>

<b>School of Materials, Energy, Water and Environmental Sciences (MEWES)</b>		
<b>– Materials Science and Engineering (MaSE) Cluster –</b>		
<b>Degree</b>	<b>Specialization</b>	<b>Prerequisite Degree</b>
<b>Materials Science and Engineering (MaSE)</b>	Structural Materials	Physics, Chemistry, Biology, Mechanical Engineering, Structural Engineering, Mathematics and/or related courses, Mechanical Engineering, Civil Engineering, Chemical Engineering, Computer Engineering, Computer Science, Electrical Engineering, Polymer Engineering, Materials Science and Engineering and related fields.
	Energy Materials	In addition to the above, applicants holding Bachelor's degrees majoring in Chemistry, Physics or Biology, like Bachelor of Education with Chemistry/Biology/Physics and Bachelor of Science (Chemistry/Biology/Physics) <b>MUST</b> have at least "B" grades in Chemistry, Biology, Physics courses and/or other courses related to Environmental Sciences/Engineering and Chemical Engineering. Work experience in indigenous raw materials application, material structure and failure and nanotechnology will be an added advantage.

<sup>1</sup> The entire coursework for Master of Science in Public Health will take place at the Ifakara Health Institute, Bagamoyo Training Centre. Courses will be offered by Staff from the two Institutions.

<b>School of Materials, Energy, Water and Environmental Sciences (MEWES)</b>		
<b>– Sustainable Energy Sciences and Engineering (SESE) Cluster –</b>		
<b>Sustainable Energy Science and Engineering (SESE)</b>	Sustainable Renewable Energy Engineering	Energy Engineering, Electrical, Engineering, Mechanical Engineering, Chemical Engineering, Chemicals and Processing Engineering; Bachelor's degrees in other Engineering disciplines or natural sciences (Physics and Chemistry) may also be sufficient provided that relevant coursework in Thermodynamics, Basic Engineering, Statics and Dynamics Controls, Heat Transfer, Fluid Dynamics, Energy and Mass Transfer, Reactor Design, Electrochemistry, Semiconductors, Mathematics:-with a focus on Numerical Analysis, Vector Calculus, Differential Equations, Computer Programming knowledge or related fields were pursued.
	Sustainable Nuclear Power Engineering	
	Sustainable Power Generation and Energy Utilization	
	Applicants <b>MUST</b> have at least “B” grades in Chemistry, Physics, Mathematics, Energy Sciences and/or Mechanical Engineering and related courses in their Bachelor's degrees.	
<b>– Water and Environment Science and Engineering (WESE) Cluster –</b>		
Degree	Specialization	Prerequisite Degree Courses
<b>Hydrology and Water Resources Engineering (HWRE)</b>	Hydrology and Climate Studies	Water Resources Engineering, Irrigation Engineering, Geology, Hydrogeology, Environmental Science, Environmental Engineering, Geography, Civil Engineering, Sanitation Engineering, Mining Engineering and related fields.
	Water Resources Engineering	
	Irrigation Engineering	
	Water Supply and Sanitation	
In addition to the above, applicants <b>MUST</b> have at least “B” grades at a Bachelor's degree, in courses majoring the degree programme/specialty applied for. Work experience and knowledge in modeling will be an added advantage.		
<b>Environmental Science and Engineering (EnSE)</b>	Environmental Science	Chemistry, Biology, Zoology, Aquatic/Marine Sciences, Chemical Engineering, Environmental Science/Engineering, Food Sciences/Engineering, Biochemical Engineering, Agriculture, Wildlife, Forestry, Mining Engineering, Mineral Processing, Geology, Public health, Ecotourism and Natural Resources Conservation
	Environmental Engineering	
	In addition to the above, applicants holding Bachelor's degrees majoring in Chemistry or Biology like Bachelor of Education with Chemistry/Biology and Bachelor of Science (Chemistry/Biology) <b>MUST</b> have at least “B” grades in Chemistry, Biology and/or other courses related to Environmental Science/Engineering, Chemical Engineering and related courses.	

#### 4.0 FEE STRUCTURE

Visit NM-AIST website: [www.nm-aist.ac.tz](http://www.nm-aist.ac.tz) for details on fee structure. Note that it is mandatory to pay all direct University costs.

#### 5.0 ADMISSION AND SPONSORSHIP

Applicants meeting the admission requirements will be offered provisional admission letters to enable them find sponsors for their studies. Applicants are encouraged to solicit scholarships from various funding agencies including visiting NM-AIST website.

## 6.0 APPLICATION INFORMATION AND INSTRUCTIONS

- 6.1 Applicants are required to read and understand all information before submitting their applications.
- 6.2 No student will be allowed to change the programme specialty admitted to.
- 6.3 Selected applicants will be required to produce their original transcripts and certificates for authentication during registration.
- 6.4 Applicants are required to submit the following documents to support their applications:
- (a) Duly filled application forms (Form NM - A101) available on the website [www.nm-aist.ac.tz](http://www.nm-aist.ac.tz).
  - (b) Certified copies of Certificate of Secondary Education Examination (CSEE) and Advanced Certificate of Secondary Education Examination (ACSEE) and other relevant academic certificates and certificates.
  - (c) Completed reference form (Form NM - A102) available on the website: [www.nm-aist.ac.tz](http://www.nm-aist.ac.tz).
  - (d) If employed, a signed certification of employer regarding grant of study leave.
  - (e) Evidence of English proficiency if the medium of communication in the preceding academic levels was not English.
  - (f) Bank pay-in-slip as evidence of payment of application fees (non-refundable):
    - (i) TShs 50,000/= (for Master's) or TShs. 65,000/= (for PhD) for Tanzanian applicants.
    - (ii) USD 30 (for Master's) or USD 50 (for PhD) for international applicants.

## 7.0 PAYMENT OF APPLICATION FEES

Application Fees should be paid to the following accounts:

**NM-AIST Accounts Numbers at CRDB Bank Plc:**

c 0150047604202 for TShs

c 0250047604201 for USD

**Swift Code:** CORUTZTZ }

## 8.0 SUBMISSION OF APPLICATIONS

Applications can be submitted by e-mail, post or hand delivery to the following addresses:

- (a) **By E-mail:** [admission@nm-aist.ac.tz](mailto:admission@nm-aist.ac.tz)
- (b) **By Post:**  
The Admissions Department,  
The Nelson Mandela African Institution of Science and Technology,  
P.O. Box 447,  
ARUSHA - TANZANIA.

**(c) Hand Delivery:**

The Admissions Department,  
Administration Block, Wing E; Office No. 105  
The Nelson Mandela African Institution of Science and Technology, Tengeru.

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**NOTE:**

- (i) Applications may be submitted throughout the year. However, applications for admission into coursework and dissertation programmes should reach the institution **before 25<sup>th</sup> November, 2016** for students intending to commence studies in the 2016/17 Academic Year.
- (ii) The 2016/17 Academic year for new students studying Master's and PhD by Coursework shall commence on the 9<sup>th</sup> January 2017
- (iii) Candidates for Master's and PhD by research and thesis programmes will be admitted throughout the year.