

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



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**INVITATION TO APPLY FOR ADMISSION INTO MASTER'S AND PhD  
PROGRAMMES FOR 2018/19 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 deliver and promote high quality and internationally competitive teaching and learning, research and innovation, and public service in Science, Engineering and Technology leveraging on entrepreneurship for enhanced value addition to people and natural resources, with a view to stimulating, catalyzing and promoting economic growth and sustainable development in Tanzania and Sub-Saharan Africa. 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 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 African countries. 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 qualified candidates for admission into various Master's and PhD programmes on offer for 2018/19 academic year as shown in table 1.

**Table 1: Degree Programmes and Specializations**

School	Degree Programme	Area of Specialization
Life Sciences and Bio-Engineering (LiSBE)	(i) Master's in Life Sciences (ii) PhD in Life Sciences	Health and Biomedical Sciences
		Sustainable Agriculture
		Food and Nutritional Sciences
		Biodiversity and Ecosystems Management
	(iii) Masters of Science in Public Health Research	Determinants of Health and Diseases
		Intervention Research
		Implementations and Health Systems Research
Computational and Communication Science and Engineering (CoCSE)	(i) Master's in Mathematical and Computer Science and Engineering (ii) PhD in Mathematical and Computer Science and Engineering	Applied Mathematics and Computational Science
		(i) Master's in Information and Communication Science and Engineering (ii) PhD in Information and Communication Science and Engineering
	Electronics and Telecommunications Engineering	
	Materials, Energy, water and Environmental Sciences (MEWES)	(i) Master's in Materials Science and Engineering (ii) PhD in Materials Science and Engineering
Energy Materials		
(iii) Master's in Sustainable Energy Science and Engineering (iv) PhD in Sustainable Energy Science and Engineering		Sustainable Power Generation and Energy Utilization
		Sustainable Renewable Energy Engineering
(v) Master's in Hydrology and Water Resources Engineering (vi) PhD in Hydrology and Water Resources Engineering		Hydrology and Climate Studies
		Water Resources Engineering
		Irrigation Engineering
(vii) Master's in Environmental Science and Engineering (viii) PhD in Environmental Science and Engineering		Water Supply and Sanitation
		Environmental Science
Environmental Engineering		

### **3.0. ENTRY REQUIREMENTS**

#### **3.1. For Master's Programmes**

##### **3.1.1. Master's by Coursework and Dissertation**

- (i) Possess a Bachelor's degree with at least a GPA of 3.0/5.0 or its equivalent in the appropriate field of study from the accredited university or similar institution of higher Learning and/or;
- (ii) Applicants holding unclassified degrees (e.g. M.D, BVM & DDS) should have at least an overall of "C" grade and average of "B" grade in the relevant subject or field of his/her specialization and;
- (iii) Satisfy the specific requirements in each degree programme and areas of specialization as specified in section 3.5.

##### **3.1.2. Master's by Research and Thesis**

- (i) Possess a Bachelor's degree with at least a GPA of 3.5/5.0 or its equivalent in the appropriate field of study from an accredited university or similar institution of higher learning and/or;
- (ii) Applicants holding unclassified degrees (e.g. M.D, BVM & DDS) should have at least an overall of "C" grade and average of "B" grade in the relevant subject or field of his/her specialization and;
- (iii) 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 and;
- (iv) A concise ONE-page concept note of what the applicant wishes to research on as part of the study and;
- (v) Readiness to pursue common core courses recommended to enhance research performance.

#### **3.2. For PhD Programmes**

##### **3.2.1. PhD by Coursework and Dissertation**

- (i) Possess a Bachelor's degree with at least a GPA of 3.0/5.0 or its equivalent in the appropriate field of study from an accredited university or similar institution of higher learning and/or;
- (ii) Applicants holding unclassified degrees (e.g. M.D, BVM & DDS) should have at least an overall of "C" grade and average of "B" grade in the relevant subject or field of his/her specialization and;
- (iii) Possess a Master's degree from an accredited university or similar institution of higher learning with a minimum GPA of 3.5/5.0 in the appropriate field of study or at least average of "B" in the relevant subjects or field of specialization and;

- (iv) Satisfy the specific requirements in each degree programme and areas of specialization as specified in section 3.5.

### **3.2.2. PhD by Research and Thesis**

- (i) Possess a Bachelor's degree from an accredited university or similar institution of higher learning with a GPA of at least 3.5/5.0 or its equivalent in the appropriate field of study and or;
- (ii) Applicants holding unclassified degrees (e.g. M.D, BVM & DDS) should have at least an overall of "C" grade and an average of "B" grade in the relevant subject or field of his/her specialization and;
- (iii) Possess a Master's degree from an accredited university or similar institution of higher learning with a minimum GPA of 3.5/5.0 in the appropriate field of study or at least average of "B" in the relevant subjects or field of specialization and;
- (iv) Research experience as demonstrated 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 producing evidence of a patent/prototype emanating from his/her research/innovation work and/or being PI or Co-PI of a funded research project with a PhD training component;
- (v) A concise TWO - pages concept note of what the applicant wishes to research on as part of the study and;
- (vi) Readiness to pursue common core courses recommended to enhance research performance.

### **3.3. English Proficiency**

All applicants **MUST** possess adequate knowledge of written and spoken English which may be demonstrated in the following forms:

- (i) Successful completion of a Bachelor degree from a recognized university or similar institution of higher learning where English is the language of instruction or;
- (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 or;
- (iii) Submission of official results of 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 score of 80 (or higher).

### **3.4. Academic Transcripts and Certificates**

- (i) All academic awards in languages other than English **MUST** submit notarized English translations during application and ;
- (ii) All Bachelors and Masters academic awards obtained from foreign institutions must be submitted for authentication by the Tanzania Commission for Universities (TCU) through the link: <http://faas.tcu.go.tz/login.php>.

### 3.5. 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.

**Table 2: School of Life Science and Bioengineering (LiSBE)**

Degree Program	Specialization	Prerequisite degree Courses
<b>Life Sciences</b>	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; Agroecology, Botanical Science; Range Management and related fields.
	Food and Nutritional Sciences	Food Technology; Food Science and Technology; Food Biotechnology/Engineering; Functional Foods; Food Product Development; Food Safety; Food Safety and Quality; Food Chemistry/Biochemistry; Food Processing Technology/Engineering; Industrial Biotechnology; Postharvest Technology/Engineering; Food Security; Food Quality Assurance and other related fields/equivalent; Human Nutrition and Dietetics; Clinical Nutrition; Dietetics; Human Nutrition; Home Economics and Human Nutrition; Community Nutrition and related fields.
	Biodiversity and Ecosystem Management	Ecology and Biodiversity; Wildlife Science and Conservation; Conservation Biology; Forestry; Silviculture; Aquaculture; Evolutionary Biology; Tropical Biodiversity and Wildlife Management; Organic Chemistry; Microbiology; Agroecology; Animal Science; Population Biology and related fields.
Masters of Science in Public Health Research (MSc. PHR)	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.

**Table 3: School of Computational and Communication Science and Engineering (CoCSE)**

Degree Programme	Specialization	Prerequisite degree Courses
Mathematical and Computer Science and Engineering (MCSE)	Applied Mathematics and Computational Science (AMCS)	Mathematics; Applied Mathematics and related fields  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.
Information and Communication Science and Engineering (ICSE)	Information Technology Systems Development and Management	Information Systems; Information Technology; Informatics; Computer Science; Software Engineering; Computer Engineering, or related fields
	Electronics and Telecommunications Engineering (ETE)	Telecommunications Engineering; Electronics Engineering; Electrical Engineering; Computer Networks, or related fields

**Table 4: School of Materials, Energy, Waters and Environmental Science (MEWES)**

Degree programme	Specialization	Prerequisite degree Courses	Specific Requirements
Hydrology and Water Resources Engineering	Hydrology and Climatic Studies	Water Resources Engineering, Irrigation Engineering, Geology, Hydrogeology, Environmental Science, Environmental Engineering, Geography, Civil Engineering, Sanitation Engineering, Mining Engineering and related fields.	Applicants <b>MUST</b> have at least "B" grades in Bachelor's degree in courses majoring the degree programme/ specialty applied for. He/she should have studied Geography with other science subjects or having engineering background.
	Water Resources Engineering		
	Irrigation Engineering		
	Water Supply and Sanitation		
Environmental Science and Engineering	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  Water Resources Engineering, Microbiology and related fields.	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.
	Environmental Engineering		
	Structural Materials	Physics, Chemistry, Biology, Mechanical Engineering, Structural Engineering, Mathematics and/or related courses, Mechanical Engineering,	Bachelor degrees majoring in Chemistry, Physics or Biology, like Bachelor of Education with Chemistry/Biology/Physics and Bachelor

Materials Science and Engineering	Energy Materials	Civil Engineering, Chemical Engineering, Computer Engineering, Computer Science, Electrical Engineering, Polymer Engineering, Materials Science and Engineering and related fields.	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.
Sustainable Energy Science and Engineering	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) and sufficient coursework in Thermodynamics.	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.

#### 4.0. FEE STRUCTURE

The fee structure for 2018/19 is available on the NM-AIST website: [www.nm-aist.ac.tz](http://www.nm-aist.ac.tz)

#### 5.0. SPONSORSHIP OPPORTUNITIES

A limited number of scholarships are available on competitive bases in the academic year 2018/2019. Table 5 shows the research focus areas and the respective projects/centers which provide the scholarships. Applicants are required to align their research Concept Note to the respective research focus areas.

**Table 5: Themes/Research Focus Areas and Funding Centers / Projects**

School	Themes/Research Focus Areas	Funding Centers / Projects
Life Sciences and Bio-Engineering (LiSBE)	<p><b>1. Health and Biomedical Sciences</b></p> <ul style="list-style-type: none"> <li>• Human health (communicable and non-communicable diseases, emerging and re-emerging infectious diseases, prevention, control, interventions)</li> <li>• Health and productivity of livestock (Livestock diseases, husbandry systems, prevention, control, interventions)</li> <li>• Genetics, genomics and bioinformatics</li> </ul> <p><b>2. Biodiversity and Ecosystem Conservation</b></p> <ul style="list-style-type: none"> <li>• Medicinal natural products</li> <li>• Microbial processing</li> <li>• Ecological conservation</li> </ul> <p><b>3. Sustainable Agriculture</b></p> <ul style="list-style-type: none"> <li>• Tissue culture</li> <li>• Agricultural intensification</li> <li>• Pre and Post harvest losses</li> <li>• Biotic and abiotic stress in plants</li> </ul> <p><b>4. Food and Nutritional Sciences</b></p> <ul style="list-style-type: none"> <li>• Food safety</li> <li>• Food bioengineering</li> <li>• Nutrition</li> <li>• Functional foods.</li> </ul>	The Centre for Research, agricultural Advancement, Teaching Excellence and Sustainability in Food and Nutritional Security ( <b>CREATES</b> ) – is the African Centre of Excellence <b>ACE II</b>

<p><b>Computational and Communication Science and Engineering (CoCSE)</b></p>	<ol style="list-style-type: none"> <li><b>1. e-systems development, management and interoperability</b> <ul style="list-style-type: none"> <li>• e-learning, e-Government, e-Health, e-Justice, e-Repositories, e-Money, smart systems, e-agriculture</li> </ul> </li> <li><b>2. Wireless and communication systems</b> <ul style="list-style-type: none"> <li>• <b>Wireless sensor networks:</b> Agriculture and Health Informatics, pollution monitoring and management, Biodiversity (wildlife monitoring and management, Conservation and Environment), Food security and nutrition, smart home systems, Agriculture, Intelligent transport systems, Industry, Disaster management and early warning systems, pollution control and management, Greening the wireless communication (Energy efficient WSN, Wireless Routers),</li> <li>• <b>Measurements and control of communication systems</b></li> <li>• electromagnetic compatibility</li> </ul> </li> <li><b>3. Information systems security</b> <ul style="list-style-type: none"> <li>• Biometric, ethical hacking, forensics, Intrusion detection, cyber security</li> </ul> </li> <li><b>4. Mathematical Modeling</b> <ul style="list-style-type: none"> <li>• Biomathematics, Engineering, Epidemiology, Financial mathematics</li> </ul> </li> <li><b>5. Data analytics, Machine Learning, and optimization</b> <ul style="list-style-type: none"> <li>• Biomathematics, Engineering, Epidemiology, Financial mathematics, transportation, supply chain, communication, logistics, bioinformatics, agriculture and livestock informatics</li> </ul> </li> </ol>	<p>Centre of Excellence in ICT in East Africa (CENTIT@EA)</p>
<p><b>Materials, Energy, Waters and Environmental Science (MEWES)</b></p>	<ol style="list-style-type: none"> <li><b>1. Native Energy Research and Development (NERD):</b> <i>Development of alternative and sustainable energy sources for domestic and industrial use</i> <ul style="list-style-type: none"> <li>• Smart Grids</li> <li>• Solar mapping</li> <li>• Renewable energy systems (e.g solar PV, solar thermal, wind, biogas, and fuel cells)</li> <li>• Nuclear Technology (e.g. NDT)</li> <li>• Energy Storage Systems</li> <li>• Energy Management</li> <li>• Thermal Energy Systems</li> </ul> </li> <li><b>2. Advanced Materials Research and Development (AMRD):</b> <i>Development of materials for various applications, technological development and innovations</i> <ul style="list-style-type: none"> <li>• Nano technology</li> <li>• Catalysis Research</li> <li>• Ceramics</li> <li>• Quantum chemical modeling</li> <li>• Composite Materials</li> <li>• Failure Analysis</li> <li>• Energy Materials</li> <li>• Device and systems Development (e.g sensor Development)</li> </ul> </li> <li><b>3. Climate and Atmospheric Sciences (CAS):</b> <i>Climate change modeling and studies on short-, medium- and long-term impacts, and design of appropriate responses</i> <ul style="list-style-type: none"> <li>• Meteorology and hydrology</li> <li>• Climate change (Paleoclimate, Mitigation technologies, Adaptation science and technology)</li> <li>• Modeling (e.g Environmental modelling)</li> </ul> </li> <li><b>4. Environmental Systems Engineering and Management (ESEM):</b> <i>Development of efficient technologies for waste management and the treatment of industrial and domestic waste</i> <ul style="list-style-type: none"> <li>• Industrial ecology</li> <li>• Environmental biotechnology</li> </ul> </li> </ol>	<p>The African Centre of Excellence (ACE-II) in Water Infrastructure and Sustainable Energy Futures (WISE – Futures)</p>

	<ul style="list-style-type: none"> <li>• Environmental toxicology</li> <li>• Renewable energy systems</li> <li>• E-Waste Management</li> <li>• Fluoride removal technologies</li> <li>• Water re-use (e.g. for irrigation)</li> <li>• Pollution control (air, soil and water) and remediation</li> <li>• Wastewater treatment and fecal sludge Management</li> <li>• Rural-Urban water supply and sanitation systems (Improvement of water sanitation and reduction of waterborne diseases through efficient and affordable technologies, such as using nano-technology among others)</li> </ul>	
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## 6.0. APPLICATION INFORMATION AND INSTRUCTIONS

- (i) All applicants must access, register and fill their application information through the Online Admission System available on the website [www.nm-aist.ac.tz](http://www.nm-aist.ac.tz).
- (ii) Applicants are required to read and understand all information and instructions.
- (iii) The following documents MUST be organized, processed in PDF file, uploaded and submitted through Online Admission System:
  - a) Certified copies of all academic transcripts and certificates;
  - b) Certified copies of Secondary Education Examinations;
  - c) Certified copy of birth certificate or evidence of National Identity;
  - d) If employed, evidence of study leave or recommendation by employer regarding grant of study leave;
  - e) Evidence of English Proficiency if the medium of communication in the preceded academic levels were not in English Language;
  - f) Evidence of Bank pay-in-slip for application fees amount:
    - (i) For Tanzanians: TShs. 50,000/= for Masters or TShs.65, 000/= for PhD applicants.
    - (ii) For International applicants: USD 25 for Masters or USD 32 for PhD applicants

## 7.0 PAYMENT OF APPLICATION FEES

### 7.1. For Tanzania Currency:

**Bank Name:** CRDB Usa River  
**Account No:** 0150047604202  
**Account Name:** Student Fees TShs

### 7.2. For: USD Currency:

Account Name	NM-AIST STUDENT FEES USD
Account Number	0250047604201
Bank Name	CRDB BANK
Bank Branch Address	USA BRANCH ARUSHA
SWIFT Code	CORUTZTZ
Branch Tel:	+255-272553741

## **8.0. DEADLINE OF APPLICATIONS**

All applications **MUST** be submitted before 30<sup>th</sup> October 2018 for students intending to commence studies in the subsequent academic year. However, applications for Master's and PhD by research and thesis programmes may be submitted throughout the year.

**Note:** Enquiries and clarifications should be sent through [admission@nm-aist.ac.tz](mailto:admission@nm-aist.ac.tz)