

**ADDIS ABABA INSTITUTE OF TECHNOLOGY  
ADDIS ABABA UNIVERSITY  
CENTER OF BIOMEDICAL ENGINEERING**

**M.Sc. Degree in Biomedical Engineering**

**March 2017**

## 1. Admission Requirement

The applicant must have:

- B.Sc. degree in biomedical engineering from an accredited university to be enrolled in any of the tracks (bio-Instrumentation, bio-Rehabilitation) ; or
- **Not eligible for ABEM scholarship:** B.Sc. degree in electrical engineering or applied physics or related sciences from an accredited university to be enrolled in bio-instrumentation program after successful completion of bridge courses; or
- **Not eligible for ABEM scholarship:** B.Sc. degree in mechanical engineering or related fields from an accredited university to be enrolled in bio-rehabilitation program after successful completion of bridge courses;

## 2. Language of Instruction

English.

## 3. Program duration

Program duration is maximum of two years. Enrolment for the MSc program is possible only during the fall semester. Students should check the Addis Ababa University website to learn about application deadlines.

## 4. Graduation Requirement

Candidates must complete 29 credit hours (58 ECTS) of course work beyond the undergraduate level. Successful completion of the Practical Attachment (2 Cr, 4 ECTS) in a recognized healthcare institution and the M.Sc. thesis dissertation are additional requirements to fulfill the graduation requirements.

## 5. Degree Scheme

Only degree seeking program is available at the moment and no credit seeking scheme is implemented. Credit seeking policy is not available at the moment.

## 6. Degree Nomenclature

**Master of Science Degree in Biomedical Engineering (Bio-Instrumentation)**

የሳይንስ ማስተር ዲግሪ በባዮሜዲካል ምህንድስና (ባዮ-ኢንስትሩመንቴሽን)

**Master of Science Degree in Biomedical Engineering (Bio-Rehabilitation)**

የሳይንስ ማስተር ዲግሪ በባዮሜዲካል ምህንድስና (ባዮ-ሪሃቢሊቴሽን)

## 7. Course Listing

### a) Bridge Courses for B.Sc. Graduates in Engineering or Applied Physics

Course Code	Semester I Bridge Courses	Cr Hr	ECTS	
BMED-1192	Human Anatomy & Physiology	3	5	Common Courses
Chem-2193	Fundamentals of Bio-Chemistry	3	5	
Biol-2194	Cell Biology & Genetics	3	5	
BMED-2195	Introduction to Biomedical Engineering	3	5	
Phys-2201	Biophysics	3	5	
BMED-2202	Bio-optics	3	5	
Course Code	Semester II Bridge Courses	Cr Hr	ECTS	
BMED-3220	Bio-fluid Mechanics and Bio-transport	3	5	Common
BMED-5260	Medical Hazards & Safety	3	5	
BMED-2280	Medical Radiation Physics	3	5	Bio-Instrument.
BMED-3230	Biomedical Instrumentation	4	6	
BMED-4230	Biomedical Imaging and Image Processing	4	6	
BMED-4241	Biomedical System Design	3	5	
BMED-3301	Fundamentals of Biomechanics	3	5	Bio-Rehabilita.
BMED-3303	Rehabilitation Engineering	3	5	
BMED-3341	Biomaterials & Applications	3	5	
BMED-5411	Neural Science	3	5	

### b) Common Core Courses

Crs Code	Crs Title	Cr.	ECTS
BMED-6001	Mathematical Methods in Biomedical Engineering	3	6
BMED-6002	Current Research in Biomedical Engineering	3	6
BMED-6003	Research Methods & Scientific Writing	3	6
BMED-6004	Bio-MEMS and Nanotechnology	3	6
BMED-6006	Practical Attachment	2	4
BMED-7099	Thesis	-	30

**c) Bio-Instrumentation Core Courses**

<i>Crs Code</i>	<i>Crs Title</i>	<i>Cr.</i>	<i>ECTS</i>
<i>BMED-6101</i>	<i>Advanced Biomedical Instrumentation</i>	3	6
<i>BMED-6103</i>	<i>Advanced Biomedical Imaging</i>	3	6
<i>BMED-6108</i>	<i>Healthcare Technology Management</i>	3	6

**d) Bio-Rehabilitation Core Courses**

<i>Crs Code</i>	<i>Crs Title</i>	<i>Cr.</i>	<i>ECTS</i>
<i>BMED-6201</i>	<i>Advanced Biomechanics &amp; Rehabilitation</i>	3	6
<i>BMED-6203</i>	<i>Quantitative Physiology</i>	3	6
<i>BMED-6205</i>	<i>Biomaterials and Biomedical Devices</i>	3	6
<i>BMED-6208</i>	<i>Prosthetics and Orthotics</i>	3	6

**e) Elective Courses for Bio-Instrumentation**

<i>Crs Code</i>	<i>Crs Title</i>	<i>Cr.</i>	<i>ECTS</i>
<i>BMED-6310</i>	<i>Nuclear Medicine</i>	3	6
<i>BMED-6311</i>	<i>Biomedical Optics I</i>	3	6
<i>BMED-6312</i>	<i>Biomedical Optics II</i>	3	6
<i>BMED-6313</i>	<i>Advanced Radiation Physics</i>	3	6
<i>BMED-6314</i>	<i>Radiotherapy Technology</i>	3	6
<i>BMED-6315</i>	<i>Clinical &amp; Health Service Engineering</i>	3	6
<i>BMED-6316</i>	<i>Ultrasonics in Medicine</i>	3	6
<i>BMED-6318</i>	<i>Medical Application of Lasers</i>	3	6
<i>BMED-6319</i>	<i>Health Informatics</i>	3	6

**f) Elective Courses for Bio-Rehabilitation**

<i>Crs Code</i>	<i>Crs Title</i>	<i>Cr.</i>	<i>ECTS</i>
<i>BMED-6320</i>	<i>Physical Ergonomics</i>	3	6
<i>BMED-6322</i>	<i>Prosthetics &amp; Orthotics</i>	3	6
<i>BMED-6324</i>	<i>Biopolymers</i>	3	6
<i>BMED-6326</i>	<i>Neural Engineering</i>	3	6

## 8. Postgraduate Courses Schedule

8.1 Track: Bio-Instrumentation		ECTS	Cr.	Lec	T/L
<b>Sem I (Yr-1)</b>					
BMED-6001	Mathematical Methods in Biomedical Eng'g	6	3	3	2
BMED-6003	Research Methods & Scientific Writing	6	3	3	2
BMED-6101	Advanced Biomedical Instrumentation	6	3	3	2
BMED-6103	Advanced Biomedical Imaging	6	3	3	2
	<b>One Elective</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>2</b>
<i>BMED-6311</i>	<i>Advanced Bio-optics I</i>	6	3	3	2
<i>BMED-6313</i>	<i>Advanced Radiation Physics</i>	6	3	3	2
<i>BMED-6315</i>	<i>Clinical &amp; Health Service Engineering</i>	6	3	3	2
<i>BMED-6317</i>	<i>Health Informatics</i>	6	3	3	2
<b>Sem II (Yr-1)</b>					
BMED-6002	Current Research in Biomedical Engineering	6	3	3	-
BMED-6004	Bio-MEMS and Nanotechnology	6	3	3	2
BMED-6006	Practical Attachment	4	2	-	6
BMED-6108	Healthcare Technology Management	6	3	3	2
	<b>One Elective</b>	<b>6</b>	<b>3</b>		
<i>BMED-6310</i>	<i>Nuclear Medicine</i>	6	3	3	2
<i>BMED-6312</i>	<i>Advanced Bio-optics II</i>	6	3	3	2
<i>BMED-6314</i>	<i>Radiotherapy Technology</i>	6	3	3	2
<i>BMED-6316</i>	<i>Ultrasonics in Medicine</i>	6	3	3	2
<i>BMED-6318</i>	<i>Medical Application of Lasers</i>	6	3	3	2
<b>Yr-2</b>					
BMED-7099	Thesis	<b>30</b>	-	-	-

8.2 Track: Bio-Rehabilitation		ECTS	Cr.	Lec	T/L
<b>Sem I (Yr-1)</b>					
BMED-6001	Mathematical Methods in Biomedical Eng'g	6	3	3	2
BMED-6003	Research Methods & Scientific Writing	6	3	3	-
BMED-6201	Advanced Biomechanics and Rehabilitation	6	3	3	2
BMED-6203	Quantitative Physiology	6	3	3	2
BMED-6205	Biomaterials and Biomedical Devices	6	3	3	2
<b>Sem II (Yr-1)</b>					
BMED-6002	Current Research in Biomedical Engineering	6	3	3	-
BMED-6004	Bio-MEMS and Nanotechnology	6	3	3	2
BMED-6006	Practical Attachment	4	2	-	6
BMED-6208	Prosthetics and Orthotics	6	3	3	-
	<b>One Elective</b>	<b>6</b>	<b>3</b>		
<i>BMED-6320</i>	<i>Physical Ergonomics</i>	6	3	3	2
<i>BMED-6322</i>	<i>Neural Engineering</i>	6	3	3	2
<i>BMED-6324</i>	<i>Biopolymers</i>	6	3	3	2
<b>Yr-2</b>					
BMED-7099	Thesis	<b>30</b>	-	-	-