

Biomedical Electronics Technician - BMD

Biomedical electronics technicians are expected to obtain knowledge of the principles of modern biomedical techniques, the proper procedure in the care, handling and maintenance of biomedical equipment and to display an attitude/behavior expected of an electronics technician who works in a hospital or healthcare environment. Once the CET has acquired these skills, abilities and knowledge, he or she will be able to enter employment in any part of the biomedical electronics field. With minimal training in areas unique to specific products, the CET should become a profitable and efficient part of the medical workforce.

Biomedical Electronics Technicians must be knowledgeable and have abilities in the following technical and human relations areas:

1.0 The Human Nervous System

- 1.1 Explain the major functions of the nervous system
- 1.2 List the major parts/divisions of the nervous system
- 1.3 Describe the functions of each part/division of the nervous system including the peripheral and the autonomic nervous system
- 1.4 Define the terms related to each part/division of the nervous system. e.g.: homeostasis; nerve impulse; neuron; reflex action; equilibrium cerebral dysfunction; lobes; etc.
- 1.5 Describe the function of the EEG machine
- 1.6 Describe the function of the cerebellum
- 1.7 Describe the function of the cerebrum
- 1.8 Describe the function of the central nervous system
- 1.9 List the functional problems associated with the EEG machine
- 1.10 List the basic care/maintenance procedures of the EEG machine

2.0 Medical Electrodes

- 2.1 Define an electrode
- 2.2 Define the term "biopotentials"
- 2.3 Explain how impedance mismatches between electrodes and skin surfaces can affect accuracy in measurements
- 2.4 Give an approximate impedance of wet human skin
- 2.5 Give an approximate impedance of dry skin
- 2.6 Define the term "Half cell potential"
- 2.7 Name different types of electrodes and the body organs to which they are applied
- 2.8 Describe the shapes of electrodes as they relate to their applications
- 2.9 Describe the chemical/paste applied between electrode and skin
- 2.10 Define the types of "artifacts" and their causes
- 2.11 List some measures which can be adopted to minimize or avoid artifacts

3.0 Cables and Cabling

- 3.1 Describe the unshielded twisted pair (UTP)
- 3.2 State where UTP cabling is used
- 3.3 Demonstrate ability to install RJ45/48 connectors and fittings
- 3.4 Explain the difference between single twisted pair and CAT-5
- 3.5 Explain where 10baseT is used and its frequency capabilities
- 3.6 Describe the T568A / T568B standards and explain their purpose
- 3.7 Explain how Cable TV coaxial cable wiring is used for data and voice services
- 3.8 Explain the differences between coax types RG 58, RG 59 and RG 6

4.0 Computer

- 4.1 Describe the interrelationship between computers and communications technology-show usage
- 4.2 Explain how a Modem interfaces with the computer
- 4.3 Describe worldwide numbering systems
- 4.4 Define network control points
- 4.5 Define database
- 4.6 Explain CTI—Computer Telephony Integration

5.0 Transducers

- 5.1 Describe a transducer
- 5.2 Sketch the configuration of a Wheatstone Bridge
- 5.3 Explain how a Wheatstone Bridge can be compared in configuration with most biomedical transducers
- 5.4 Describe the types of transducers used in biomedical instrumentation
- 5.5 Sketch the electrical configuration of different transducers
- 5.6 Name the units of transducer sensitivity
- 5.7 Define the terms associated with transducers. e.g.: piezoresistance, thermocouple, impedance

6.0 Medical Electronics Safety

- 6.1 Define electrical safety
- 6.2 List the names of major organizations which publish electrical safety codes and standards
- 6.3 List responsibilities of hospital staff regarding safety
- 6.4 Relate how preventive maintenance reduces electrical hazards
- 6.5 Define corrective maintenance
- 6.6 Define preventive maintenance
- 6.7 Explain the insurance and legal requirements regarding electrical safety
- 6.8 Develop an electrical safety program for a typical hospital
- 6.9 Explain the physiological effects of poor safety measures on the human body
- 6.10 Define leakage current
- 6.11 Explain the usefulness of A.C. line isolation systems
- 6.12 List the dangers associated with poor grounding
- 6.13 Describe required grounding of electronics equipment
- 6.14 Explain how hazards through ground faults can be reduced
- 6.15 Administer electrical safety tests on equipment
- 6.16 Explain precautions required for H.I.V. or TB prevention for hospital workers
- 6.17 List precautions for working with/on ladders
- 6.18 List extra precautions biomed personnel must take to maintain cleanliness standards in medical facilities
- 6.19 Describe the following safety code standards:
 - 6.19.1 NFPA 99
 - 6.19.2 NFPA 70
 - 6.19.3 NFPA 102
 - 6.19.4 CFR 21
- 6.20 Describe microshock (also called cardiac shock)
- 6.21 Describe macroshock
- 6.22 State the ground resistance limit for *existing* portable medical equipment in patient care areas
- 6.23 State the ground resistance limit for *new* portable medical equipment in patient care
- 6.24 State the chassis leakage current limit for portable medical equipment in patient care areas
- 6.25 State the lead leakage current limit for portable medical equipment in patient care areas
- 6.26 Describe the current rules for radiation safety required in medical equipment maintenance and use
- 6.27 Describe the current rules for safety in the maintenance and use of medical laser equipment
- 6.28 Describe fire safety rules commonly required for medical equipment maintenance personnel
- 6.29 Describe chemical rules commonly required for medical equipment maintenance personnel

7.0 Hemodialysis Equipment

- 7.1 Describe the functions of the kidneys
- 7.2 Define terms used in the study of the kidneys (e.g.: dialysis, renal, dialysate, etc.)
- 7.3 Explain why kidney failure requires hemodialysis treatment
- 7.4 State the functions of the dialysis machine
- 7.5 Sketch the main function blocks of a dialysis machine (e.g.: power supply, pressure monitor, blood pump, temperature system, bath delivery system, drain system, circulating system and control panel)
- 7.6 Explain the function of each block or section of the machine
- 7.7 State the special safety precautions associated with the wet environment of a dialysis machine (e.g.: magnetically coupled motor shaft impeller system, ground fault interrupters)
- 7.8 State some of the common problems with dialysis machines
- 7.9 List a weekly maintenance schedule for a dialysis machine

8.0 Networking

- 8.1 Describe the problems which are commonly encountered when interconnecting electronics products
- 8.2 Explain electrical surge potentials
- 8.3 List ways to combat damage from electrical surges
- 8.4 Describe medical industry safety standards
- 8.5 State the expected voltage, current or signals expected at interconnection or equipment interface points
- 8.6 Describe PCIA and wireless computer communications interfacing procedures used with medical equipment
- 8.7 Describe the Internet and its usefulness in medical data communications
- 8.8 Explain TCP/IP duties and protocols
- 8.9 Explain security problems with Internet service

9.0 Medical Ultrasound Instruments

- 9.1 Describe applications of medical diagnostic ultrasound (cardiology, ob/gyn, general radiology, etc.)
- 9.2 Explain the purpose of ultrasound in medical applications
- 9.3 Define the terms associated with ultrasound (e.g.: wavelength, acoustics, reflection, refraction, piezo effects, echocardiography, doppler effects)
- 9.4 Explain the physics of sound waves w.r.t., wavelength, velocity, period, frequency, reflection, refraction and resonator
- 9.5 Explain the biological effects of ultrasound
- 9.6 Describe the operation of the instruments used in delivering ultrasound (e.g.: the Doppler flow meter, blood pressure monitor, fetal monitor, echocardiography and echoencephalography)
- 9.7 Describe the operation ultrasound instruments
- 9.8 List safety precautions regarding the maintenance and use of ultrasound instruments
- 9.9 Describe the types of transducers used in medical diagnostic ultrasound
- 9.10 Distinguish between "sector" scans and "linear" scans
- 9.11 Define "axial resolution" and "lateral resolution"
- 9.12 Define "dead zone" as it applies to ultrasound
- 9.13 Describe the "front end" of an ultrasound scanner
- 9.14 Define "scan conversion"
- 9.15 Distinguish between "Spectral Doppler" and "Color Flow Doppler"
- 9.16 Define and describe a DICOM system
- 9.17 Explain the components of a video signal

10.0 Mathematics

- 10.1 Use mathematics to solve biomedical problems
- 10.2 Describe color coding systems used for electronics components and electrical wiring
- 10.3 Apply decibels to calculate signal loss in coaxial and fiber wiring
- 10.4 Convert numbering systems such as binary, decimal, octal and hexadecimal
- 10.5 Demonstrate the ability to use scientific calculators
- 10.6 Prepare cost estimates for a major electronic repair or installation

11.0 Building Wiring

- 11.1 List the standards used in the electrical wiring of buildings
- 11.2 Explain methods of pre-wiring and ways to wire existing buildings including entry, attic and crawl space precautions and methods of fishing walls and routing wiring through false ceilings.
- 11.3 Explain NEC or other safety rules pertaining to building wiring and grounding

12.0 Optical Wiring

- 12.1 demonstrate the rules for disposal and eye safety when working with fiber optics cabling
- 12.2 describe the types of optical cables-show knowledge of different parameters and reasons for choosing each
- 12.3 Describe the conversion process from copper to fiber signals and from fiber to copper
- 12.4 Define and explain the term SONET

13.0 Radiology

- 13.1 List the main functions of an X-ray machine
- 13.2 Describe the therapeutic applications of X-ray machines
- 13.3 State the diagnostic (measurement) function of an X-ray machine
- 13.4 State the different categories of X-ray machines (e.g.: still picture, continuous picture and motion picture)
- 13.5 List the dangers associated with X-rays
- 13.6 Name the units used for measuring radioactivity (e.g.: curie, Roentgen, Dose rate)
- 13.7 Explain the terms used in the study of radiology (e.g.: gamma, beta and alpha rays, nuclear radiation, etc.)
- 13.8 Sketch the circuit diagram of an X-ray tube
- 13.9 Sketch the circuit diagram of a Geiger-Mueller tube
- 13.10 Explain how the X-ray tubes work
- 13.11 Discuss the safety precautions associated with the handling of X-ray tubes
- 13.12 List common problems/faults of X-ray tubes
- 13.13 Sketch the circuit diagram of an X-ray machine

14.0 Test Equipment and Tools

- 14.1 Demonstrate proper use of common biomedical and electronic test equipment
- 14.2 Describe the use of Time Domain Reflectometers and OTDRs
- 14.3 List services which provide test equipment calibration for commonly used biomedical instruments
- 14.4 Describe proper use and care of soldering and desoldering equipment and the hazards of utilizing leaded solder
- 14.5 Show ability to properly prepare cable ends
- 14.6 Install fittings on cable ends and splices
- 14.7 Describe the functions of a medical oscilloscope
- 14.8 List the main differences between a medical, and a laboratory or service oscilloscope
- 14.9 List the characteristics of a medical oscilloscope (sweep speed, display format, persistence, etc.)
- 14.10 Sketch the block diagram of a medical oscilloscope
- 14.11 Explain the difference between a single beam and a dual trace scope
- 14.12 Define related terms e.g.: gating amplifier, bouncing ball, and nonfade designs

15.0 Troubleshooting

- 15.1 Demonstrate proper usage of test equipment as well as common DVM's, signal tracers and sources, oscilloscopes and loop and network testing equipment
- 15.2 Describe "Last good, first Bad" troubleshooting
- 15.3 Describe "Divide and Conquer" troubleshooting technique
- 15.4 Show how to use static arresting test procedures
- 15.5 List types of EMI which may affect the validity of test equipment results
- 15.6 Demonstrate diagnosis and repair of defective electronic medical equipment

16.0 Operating Room Familiarization

- 16.1 Describe the functions of the Operating Room (OR)
- 16.2 Describe the protocols involved in working in the Operating Room (dress code, cleanliness and attitude)
- 16.3 List the duties of the personnel employed in the Operating Room (e.g.: the nursing staff, biomedical technician, surgeon, etc.)
- 16.4 List the special equipment used in the OR
- 16.5 List the functions of the equipment used in the OR
- 16.6 Describe why anesthetics are used and what types are commonly used
- 16.7 List the safety precautions observed in the OR
- 16.8 List the different methods of sterilization
- 16.9 Define terms used in surgery. e.g.: antiseptic, suture thread, autoclave, orderlies, sterilization spore strip, etc.
- 16.10 Describe different methods of sterilization (steam, ETO, etc.)

17.0 Instrumentation—Respiratory

- 17.1 List the principle pulmonary parameters measured (capacities such as vital, functional, inspiratory, total lung; tidal, inspiratory reserve, expiratory, reserve, residual minute)
- 17.2 Describe the various respiratory transducers
- 17.3 List the instruments used with the respiratory system (spirometers, apnea monitor, etc.)
- 17.4 Describe the function of the instruments used in the respiratory system
- 17.5 Define the various volumes measured (Tidal, inspiratory reserve, expiratory, reserve, residual minute)
- 17.6 Describe the operation of adult and pediatric ventilators

18.0 Instrumentation-The Medical Laboratory

- 18.1 State the main functions and composition of blood
- 18.2 List the instruments used in the medical laboratory (calorimeters, photometer, spectrophotometer, pH analyzer, autoanalyzer, chromatograph, dialyzer)
- 18.3 State the maintenance procedures for the following medical lab instruments:
 - 18.3.1 Blood Gas Analyzers
 - 18.3.2 Co-Oximeters
 - 18.3.3 Centrifuges
 - 18.3.4 Microscopes
 - 18.3.5 Cell Counters
 - 18.3.6 Chemistry Analyzers

19.0 Electrosurgery Generators

- 19.1 Describe the function of the Electrosurgery (ESU) generator
- 19.2 Describe the operation of the Electrosurgery generator
- 19.3 Sketch the block diagram and related waveforms of an Electrosurgery generator
- 19.4 List the safety measures to be adopted when using the Electrosurgery generator
- 19.5 Describe the type of waveforms generated (coagulate, cut)
- 19.6 List the frequencies commonly used by Electrosurgical scalpels
- 19.7 Describe "REM"
- 19.8 Describe testing requirements for Electrosurgery Units

20.0 Intensive and Coronary Care Units

- 20.1 Describe the function and purpose of the special care units in the hospital
- 20.2 List the instrument systems used in ICU and CCU
- 20.3 Troubleshoot common problems associated with equipment used in ICU and CCU (e.g.: bedside monitors, cardiotachometers, alarms, lead fault indicators, central monitoring consoles, invasive blood pressure and radiotelemetry)

21.0 Cardiac Support System

- 21.1 Describe the principles of defibrillation
- 21.2 Describe the principles and operation of the pacemaker
- 21.3 Describe the principles and operation of the cardioverter
- 21.4 Describe the principles and operation of the intraaortic balloon pump
- 21.5 List three types of cardiac arrhythmias
- 21.6 Describe the events taking place in each part of the ECG waveform
- 21.7 Detail the minimum energy required from an implantable pacemaker
- 21.8 Detail the minimum energy required from an external pacemaker
- 21.9 Troubleshoot problems associated with cardiac support machines
- 21.10 Describe the principles and operation of the cell saver machine
- 21.11 Sketch the main parts of a basic cardiopulmonary bypass circuit
- 21.12 Describe all the available types of blood pumps (roller pump; modified roller pump for pulsatile perfusion, centrifugal pump)
- 21.13 Describe proper testing of a defibrillator (general steps)

22.0 Bioelectric Amplifiers

- 22.1 Describe the functions of the bioelectric amplifier
- 22.2 State the requirements for bioelectric amplifiers
- 22.3 Describe the basic principles of operation of a bioelectric amplifier
- 22.4 Describe the different configurations used in the design of bioelectric amplifiers
- 22.5 State the principles of operation of isolation amplifiers
- 22.6 List the basic properties of the operational amplifier
- 22.7 Sketch the circuit diagram of an op amp
- 22.8 Calculate voltage gain, impedance (input and output) and other characteristics of op amps
- 22.9 Define terms used in bioelectric amps (e.g.: inverter, offset null, zero suppression, summing junction, common mode rejection and virtual ground)

- end -

Recommended Texts:

1. Introduction to Biomedical Equipment Technology, 4th ed.; Joseph J. Carr, CET, ISBN 0-13-010492-2; 2001
2. Principles of Biomedical Instrumentation and Measurement; Richard Aston, Pennsylvania State University, Wilkes-Barre; Merrill Publishing Co
3. Electromagnetic Compatibility in Medical Equipment, A Guide for Designers and Installers, William D. Kimmel & Daryl D. Gerke; Institute of Electrical & Electronics. ISBN#0780311604
4. Critical Careers: A Guide to Opportunities in Medical Equipment Service; Roger Bowles, CBET, Upstream Press, Glen Rose, TX; 877 401 9100.
5. Bebop to the Boolean Boogie; Clive Maxfield; LLH Technology Pub ISBN 1-878707-22-1
6. Biomedical Instrumentation & Measurements; Cromwell-Weibell-Pfeiffer, Prentice-Hall; ISBN 0-13-076448-5
7. Biophysical Measurements; Peter Strong; Tektronix, Inc. PN 062-1247-99 (out of print)
8. Servicing Electrocardiographs; E S Kanter; H.W. Sams Co (Indpls., IN)
9. Biomedical Website; <http://hometown.aol.com>
10. Morse Medical, Inc. Presents BMET Self Study Course For the ICC Certification Exam (order through ETA)

Suggested Course Contact Hours: _____
Course suggested prerequisite: Associate C.E.T. or equivalent

BMD Specialty Exam Length: 50 questions, BIO2000 print version; 50 questions, WebKAT Internet-available version

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To the above technicians, Chairman Roger Bowles, BMET and past Chair Fitz Reid, CETsr, who designed the major portions of the competencies, a special thanks from all of the members of ETA-I for their work in refining the above.

List of Technical Schools, Community Colleges, and Universities Offering Two-Year Programs, Four-Year Programs, and Certificate Programs in Biomedical Equipment Technology (as of 2006)

(Only those states having schools with programs are listed)

Alabama

Jefferson State Community College

Associate Degree, Biomedical Equipment Technology
2601 Carson Road
Birmingham, AL 35215
205-853-1200
www.jscc.cc.al.us/catalog2000/career_programs/biomedical_equipment_technology.htm

Northwest-Shoals Community College

Certificate-Biomedical Equipment Technology
800 George Wallace Blvd.
Muscle Shoals, AL 35662
800-645-8967
<http://nwscc.cc.al.us>

Arkansas

University of Arkansas for Medical Sciences

Associate Degree-Biomedical Instrumentation Technology
College of Health Related Professions
4301 West Markam Lane
Little Rock, AR 72205
501-257-4175

California

Los Angeles Valley College

Two-year Electronics Technology Certificate in Biomedical Equipment Technology
5800 Fulton Avenue
Valley Glen, CA 91401
818-947-2600
818-947-2582
www.lavc.cc.ca.us

Santa Barbara City College

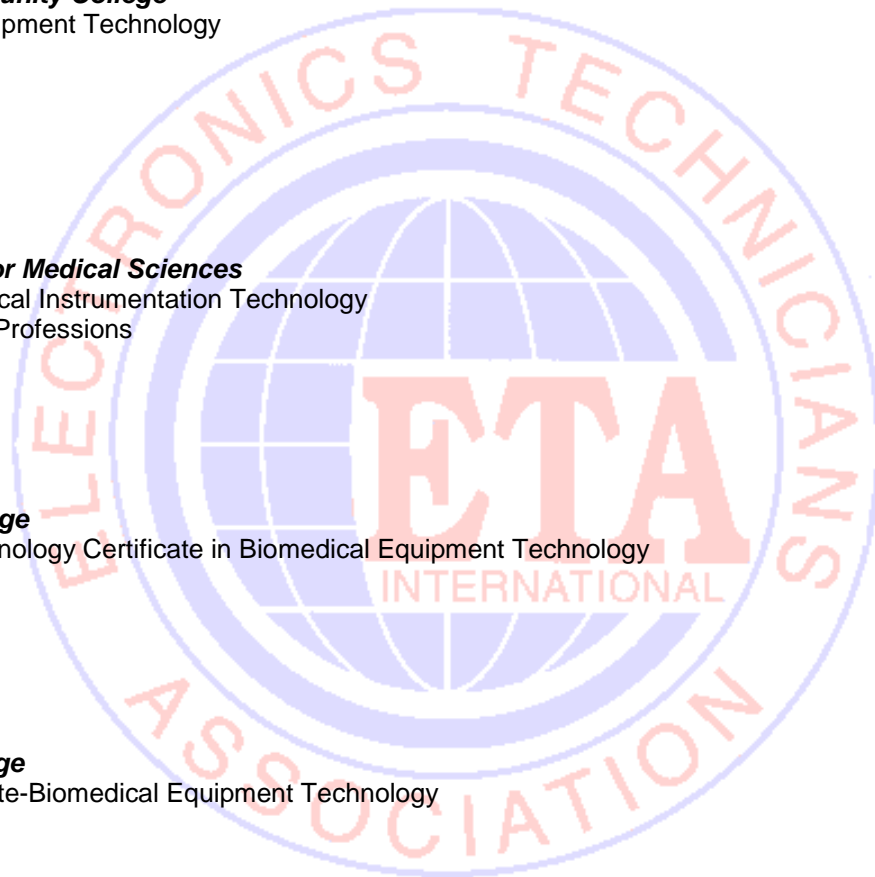
Associate Degree/Certificate-Biomedical Equipment Technology
721 Cliff Drive
Santa Barbara, CA 93105
805-965-0581
www.sbcc.cc.ca

Connecticut

Gateway Community College

Associate Degree-Biomedical Engineering Technology
North Haven Campus
88 Bassett Road
North Haven, CT 06473
Mr. Thomas McGrath, Program Coordinator
203-234-3310
www.gwctc.commnet.edu/biomedical.html

Delaware



Delaware Technical and Community College

Associate Degree-Electronics with Biomedical Electronics Technology Option
Terry Campus
1832 N. DuPont Parkway
Dover, DE 199901
302-741-2700
www.dtcc.edu

Florida

Broward Community College

Associate Degree-Biomedical Equipment Engineering Technology
225 East Las Olas Blvd.
Fort Lauderdale, FL 33301
954-761-7465
www.broward.cc.fl.us

Santa Fe Community College

Associate Degree-Biomedical Equipment Engineering Technology
3000 NW 83rd Street
Gainesville, FL 32606
352-395-5965
www.santafe.cc.fl.us

Georgia

Central Georgia Technical College

Certificate-Biomedical Electronics
3300 Macon Tech Dr.
Macon, GA 31206
912-757-3400
www.macon.tec.ga.us

Chattahoochee Technical College

Associate Degree-Biomedical Engineering Technology
Marietta Campus
980 South Cobb Dr.
Marietta, GA 30060
770-528-4500
770-528-4539, Dr. Mike O'Rear
www.chat-tec.com

Illinois

Southern Illinois University-Carbondale

B.S. Degree in Electronics Management (Biomedical Instrumentation)
Carbondale, IL 62901-6899
618-453-7200
Mr. Keith McQuarrie, Academic Advisor
keithmcq@siu.edu
www.siu.edu

Richland Community College

Associate Degree-Biomedical Electronics



One College Park
Decatur, IL 62521
217-875-7200
217-875-7211 ext. 519
Mr. Frank Wiesenmeyer, Professor
www.richland.cc.il.us/dept/electronics/hg/biomed.html

South Suburban College

Associate Degree, Certificate-Biomedical Electronics Technology
15800 S. State Street
South Holland, IL
708-596-2000 ext. 2372
www.ssc.cc.il.us

Indiana

Indiana University-Purdue University at Indianapolis (IUPUI)

Associate Degree-Biomedical Electronics Technology
Bachelors in Electrical Engineering Technology with Biomedical focus
Certificate in Clinical Laboratory Technology
799 W. Michigan Street
Indianapolis, Indiana 46202
317-274-2363
317-274-7591 (Barbara Christe)
Barbara Christe, Associate Professor
christe@enr.iupui.edu
www.enr.iupui.edu/eet/

Indiana State University

Bachelor of Science-Biomedical Electronics Technology
Department of Electronics and Computer Technology
School of Technology
Terre Haute, IN
812-237-3452
www-isu.indstate.edu/ect/bs-bio.htm

Massachusetts

Franklin Institute of Boston

Medical Electronics Engineering Technology Program
41 Berkeley Street
Boston, MA 02116
617-423-4630
www.fib.edu/md.html

Quinsigamond Community College

Associates Degree-Electronics with Biomedical Instrumentation Technician Option
670 West Boylston St.
Worcester, MA 01606-2092
508-854-4308
www.qcc.mass.edu/electronics

Maryland

Howard Community College



Associate Degree-Biomedical Engineering Technology
10901 Little Patuxent Parkway
Columbia, MD 21044
410-772-4829
Bruce Reid, Professor
breid@howardcc.edu
www.howardcc.edu

Michigan

Baker College

Associate Degree-Biomedical Engineering Technology
1050 W. Bristol Rd.
Flint, MI 48507
800-964-4299
www.baker.edu

Schoolcraft College

Associate Degree-Biomedical Engineering Technology
18600 Haggerty Road
Livonia, MI 48152-2696
734-462-4400 ext. 5162
Chris Peters, CBET, Instructor
cpeters@schoolcraft.cc.mi.us
www.schoolcraft.cc.mi.us

Minnesota

Northwest Technical College

Associate Degree, Diploma – Biomedical Equipment Technology
Detroit Lakes Campus
900 Highway 34 E.
Detroit Lakes, MN 56501-2698
800-492-4836
www.ntc-online.com

Missouri

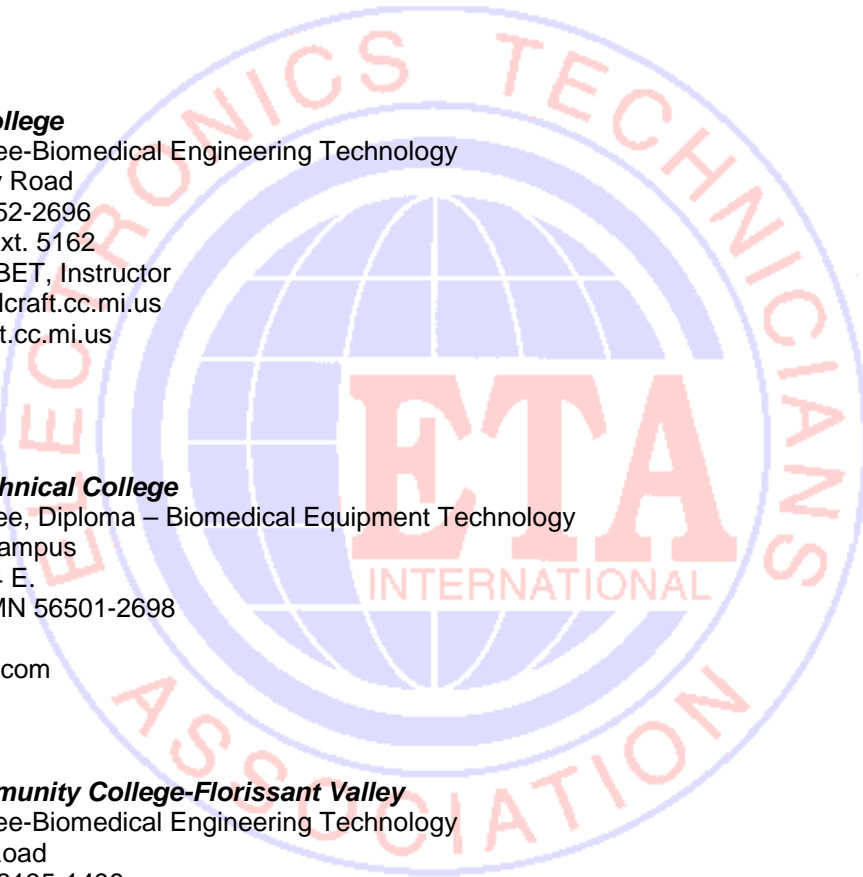
St. Louis Community College-Florissant Valley

Associate Degree-Biomedical Engineering Technology
3400 Pershall Road
St. Louis, MO 63135-1499
314-595-4200
www.stlcc.cc.mo.us

New Jersey

Thomas Edison State College

Associate, B.S.-Biomedical Electronics
101 W. State St.
Trenton, NJ
888-442-8372
admissions@tesc.edu
www.tesc.edu



New York

Erie Community College

Associate Degree-Biomedical Equipment Technology
South Campus
4041 Southwestern Blvd
Orchard Park, NY 14127
716-851-1756
<http://nstaff.sunyerie.edu/home/bet/index.htm>

North Carolina

Stanly Community College

Associate Degree-Biomedical Equipment Technology
141 College Drive
Albermarle, NC 28001
704-991-0277
704-982-0121
Mr. Michael Hogan, Program Director
hoganmt@stanly.cc.nc.us
www.stanly.cc.nc.us

Caldwell Community College and Technical Institute

Associate Degree-Biomedical Equipment Technology
2855 Hickory Blvd.
Hudson, NC 28638
828-726-2200
828-726-2344
Mr. John Noblitt, CBET, Program Director
jnoblitt@Caldwell.cc.nc.us
www.caldwell.cc.nc.us/healthsci/index.html

Ohio

Cincinnati State Technical and Community College

Associate Degree-Biomedical Electronics Engineering Technology
3520 Central Parkway
Cincinnati, OH 45223
513-569-1500
513-569-1768
Steve Yelton, Program Chairman
syelton@cinstate.cc.oh.us
www.cinstate.cc.oh.us

Owens Community College

Associate-Biomedical Electronics
P.O. Box 10000
Toledo, OH 43699
419-661-7000
419-661-7460



Mr. Paul Svatik, CBET, Professor
psvatik@owens.cc.oh.us
www.owens.cc.oh.us

Oklahoma

Tulsa Community College

Associate Degree-Electronics with Biomedical Equipment Technology Option
Northeast Campus
3727 East Apache
Tulsa, OK
918-595-7542

Dr. Jack S. Connor, Chair, Science, Mathematics, and Engineering Technology
jconnor@Tulsa.cc.ok.us
www.tulsa.cc.ok.us

Pennsylvania

Penn State-Wilkes-Barre

Associates Degree-Biomedical Equipment Technology
P.O. Box PSU
Lehman, PA 18627
570-675-9238
800-966-6613
www.wb.psu.edu

Penn State-New Kensington

Associates Degree-Biomedical Equipment Technology
3550 Seventh Street Road
New Kensington, PA 15068
724-334-6712
724-334-5466
www.nk.psu.edu

Community College of Philadelphia

Associate Degree-Electronics Engineering Technology with Biomedical Electronics Technology Option
1700 Spring Garden Street
Philadelphia, PA 19130-3991
215-751-8010
215-751-8583
Mr. Randy Libros
rlibros@ccp.cc.pa.us
www.ccp.cc.pa.us

Johnson Technical Institute

Associate Degree-Biomedical Equipment Technology
3437 North Main Avenue
Scranton, PA 18508
570-342-6404
Mr. Chris W. Roberto, Department Chair
cwrl@ptd.net
www.jti.org

South Carolina



Greenville Technical College

Certificate-Biomedical Equipment Technology (After completion of AS in Electronics)
P.O. Box 5616
Greenville, SC 29606-5606
864-250-8111
www.greenvilletech.com

York Technical College

Certificate-Biomedical Equipment Technology (After completion of AS in Electronics)
452 South Anderson Road
Rock Hill, SC 29730
803-327-8000
803-981-7030
Mr. Joe Avampato
www.yorktech.com

South Dakota

Southeast Technical Institute

Certificate-Biomedical Equipment Technology (After completion of AS in Electronics)
2301 Career Place
Sioux Falls, SD 57107
605-367-7624
<http://sti.tec.sd.us>

Tennessee

East Tennessee State University

Bachelors of Science –Biomedical Engineering Technology
P.O. Box 70552
Johnson City, TN 37614
423-439-7832
Dr. Richard Aston, Coordinator
aston@etsu.edu
www.etsu.edu

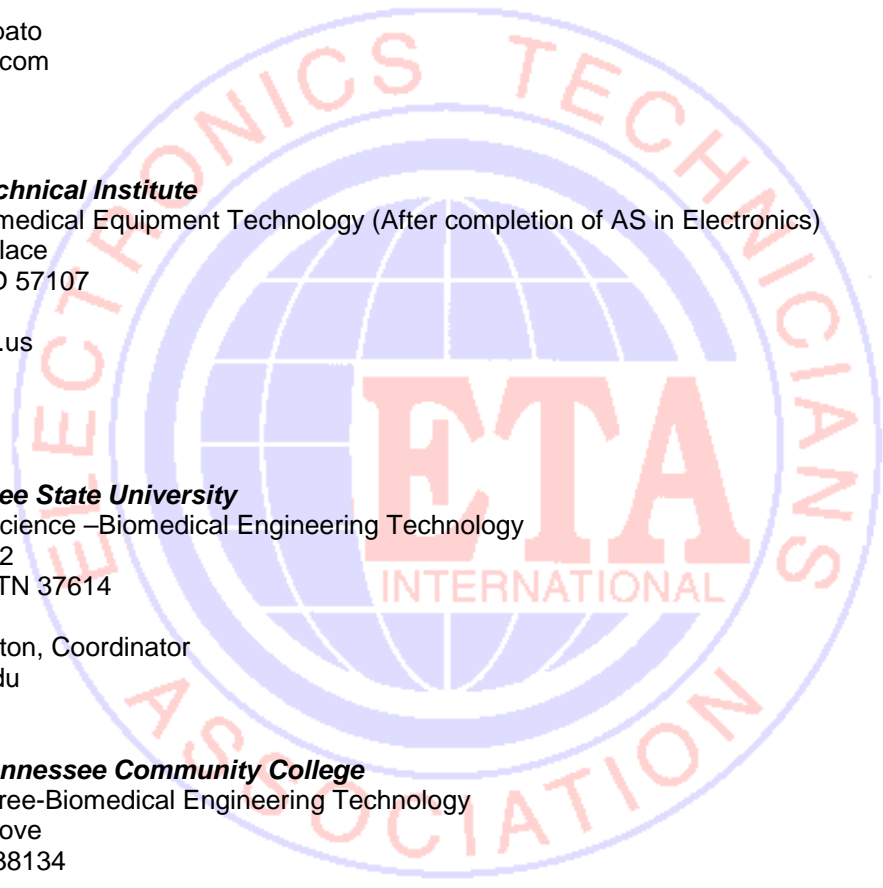
Southwest Tennessee Community College

Associate Degree-Biomedical Engineering Technology
5983 Macon Cove
Memphis, TN 38134
901-333-4000
901-333-4166
Mr. Lou French, Associate Professor
www.stcc.cc.tn.us

Texas

Grayson County College

Certificate-Biomedical Equipment Technician (After completion of Associate Degree in Electronic Engineering Technology)
Denison, TX 75020
903-465-6030
www.grayson.edu



Texas State Technical College-Harlingen

Associate Degree-Biomedical Equipment Technology
2424 Boxwood Street
Harlingen, TX 78550
800-852-8784
Mr. Tony Menesis, Dept. Chair
www.harlingen.tstc.edu

St. Philip's College

Associate Degree-Biomedical Equipment Technology
1801 Martin Luther King Drive
San Antonio, TX 78203
210-531-3200
210-531-3467
Mr. Stanley Krause, Chairperson
www.accd.edu/spc/spcmain/spc.htm

Texas State Technical College-Waco

Associate Degree-Biomedical Equipment Technology
(Also, Specialization available in Medical Imaging Service Technology)
3801 Campus Drive
Waco, TX 76705
800-792-8784
254-867-4885
Mr. Fred Khozein, Dept. Chair
fkhozein@tstc.edu
www.tstc.edu (click "Waco," and then "Technologies")

Virginia

ECPI College of Technology

Associate Degree-Biomedical Equipment Technology
5555 Greenwich Road
Virginia Beach, VA 23462
757-671-7171
Loren Tracy, Asst. Dept. Head, Biomedical
ltracey@ecpi.edu
www.ecpi.edu

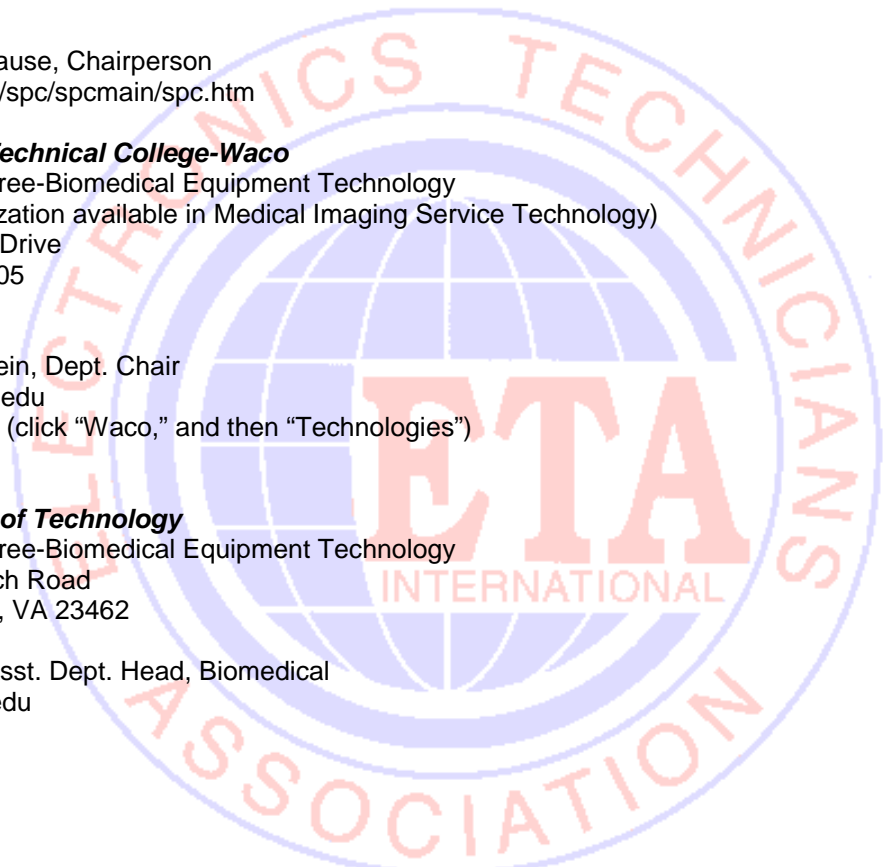
Washington

North Seattle Community College

Associate Degree-Biomedical Equipment Technology
9600 College Way North
Seattle, WA 98103-3599
206-527-3798
nscinfo@sccd.ctc.edu
www.gonorth.org/electron/biomed.htm

Spokane Community College

Associate Degree-Biomedical Equipment Technology
1810 North Greene Street
Spokane, WA 99217
509-533-7299



www.scc.spokane.cc.wa.us

Walla Walla College

Bachelor of Science Degree-Biomedical Electronics
204 S. College Ave.
College Place, WA 99324
800-541-8900

Wisconsin

Western Wisconsin Technical College

Associate Degree-Biomedical Electronics Technology
304 6th Street North
La Crosse, WI 54601
800-322-9982 (Wisconsin)
800-248-9982 (Outside Wisconsin)
Dr. Glen Skewes, Department Head
www.western.tec.wi.us

Milwaukee Area Technical College

Associate Degree-Biomedical Electronics Technology
700 West State Street
Milwaukee, WI 53233
414-297-6600
414-297-6370
www.milwaukee.tec.wi.us

CANADA

Northern Alberta Institute of Technology

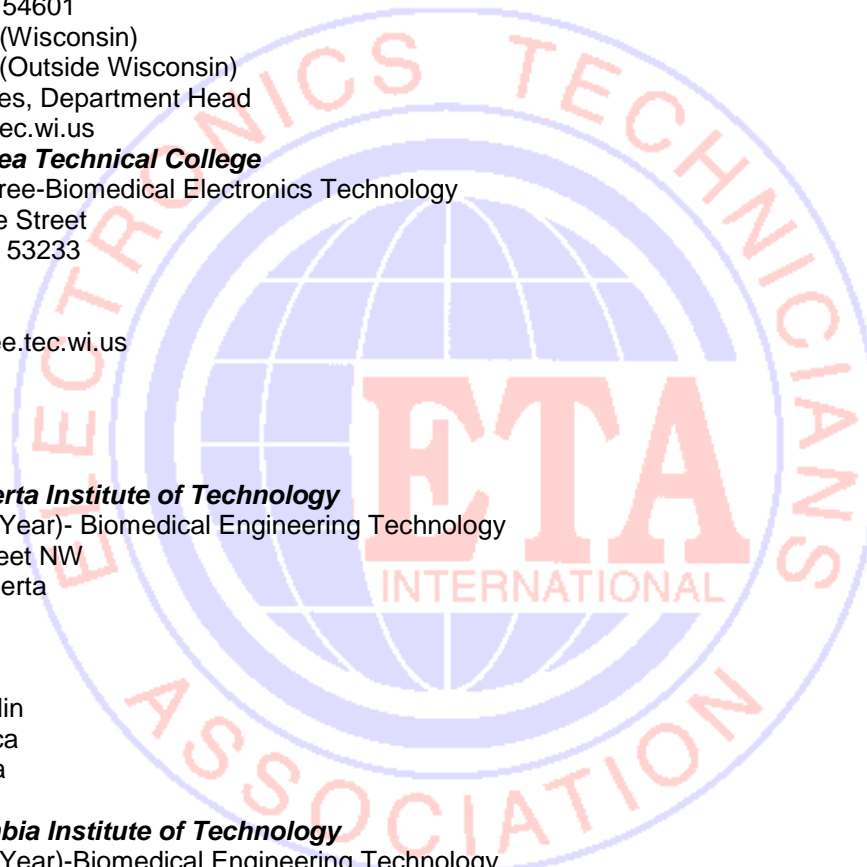
Diploma (Two-Year)- Biomedical Engineering Technology
11762-106 Street NW
Edmonton, Alberta
T5G 3H1
780-471-7400
780-471-7038
Mr. Roy Sharplin
roys@nait.ab.ca
www.nait.ab.ca

British Columbia Institute of Technology

Diploma (Two-Year)-Biomedical Engineering Technology
3700 Willingdon Avenue
Burnaby, British Columbia, Canada
V5G 3H2
800-667-0676
604-434-1610
Mr. Anthony Chan, Program Head
aychan@bcit.ca
www.bcit.ca

Fanshawe College

One Year Post Graduate Diploma-Biomedical Electronics Engineering Technician
College of Applied Arts and Technology
1460 Oxford Street East



P.O. Box 7005
London, Ontario, Canada
N5Y 5R6
519-452-4430
Mr. Larry Boyce, CBET (c), Coordinator
www.fanshawec.on.ca

