Medical Technology Training at the University of Technology, Jamaica (UTech)

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Outline of Presentation

- Medical Technology at UTech
- The Medical Technology Curriculum
- UTech's Proficiencies for Medical Technology
  - General
  - Specific
    - Medical Microbiology
- The Way Forward

Medical Technology at UTech (currently)

- In 1999, C.A.S.T. transitioned into a degree-granting institution, the University of Technology, Jamaica.

- The Medical Technology degree course of study receives in excess of 100 applicants annually since 2008/2009.
- Accredited. Reaccreditation exercise underway.

Medical Technology Curriculum

The Medical Technology Curriculum

- 4 years in duration, each year is divided into 2 semesters with an optional summer session.
- Semesters 1 & 2 approximates 15 weeks.
- The final semester of 4th year (approx. 24 weeks) sees the student immersed within selected public and private labs as an Intern Medical Technologist to hone skills.

Summary of the Medical Technology Curriculum

- TOTAL = 141 credits.
- Level 1 – fundamental of basic sciences are revisited + Introduction to Medical Technology.
- Level 2 – Each discipline taught *inclusive of Histology* (theory and practical).
- Level 3 – Further concepts in disciplines taught.
- Level 4 – Completion of disciplines with Adjunct modules such as Ethics & Project. Clinical Practicum/Internship/Rotations.

Medical Technology – Level 1

LEVEL 1 [SEMESTER 1]	Hours/Week		
Module	**Lec**	**Tut/ Prac.**	**Cr.**
Academic Writing 1	3	- / -	3
General Chemistry 1	3	- / -	3
Gen. Chemistry Practical 1	-	- / 3	1
Anatomy & Physiology 2	3	- / 3	4
College Mathematics 1B	2	2 / -	4
Medical Terminology	2	- / -	2
(Community Service Project	-	3	1)
TOTAL	**13**	**11**	**18**

LEVEL 1 [SEMESTER 2]	Hours/Week		
Module	**Lec.**	**Tut/ Prac.**	**Cr.**
Information Technology I	1	1 / 3	3
General Chemistry 2	3	- / -	3
Gen. Chemistry Practical 2	-	- / 3	1
Calculus 1	1	2/ -	3
Orientation to Medical Technology	4	3 / -	5
Introduction to Psychology	3	-/ -	3
TOTAL	**12**	**12**	**18**

Medical Technology – Level 2

LEVEL 2 [SEMESTER 1]	Hours/Week		
Module	**Lec.**	**Tut/ Prac.**	**Cr.**
General Biochemistry	3	- / -	3
Analytical Chemistry	2	1 / 3	4
Immunology	3	- / -	3
Haematology 1	4	- / 3	5
Histotechnology 1	1	- / 3	2
Medical Microbiology 1	1	- / 6	3
TOTAL	**14**	**16**	**20**

LEVEL 2 [SEMESTER 2]	Hours/Week		
Module	**Lec.**	**Tut/ Prac.**	**Cr.**
Quality Assurance in the Clinical Lab.	2	- / 2	3
Clinical Chemistry 1	4	-/ 3	5
Immunohaematology 1	3	-/ 3	4
Medical Microbiology 2	2	-/ 6	4
Academic Writing 2	3	- / -	3
TOTAL	**14**	**14**	**19**

Medical Technology – Level 3

LEVEL 3 [SEMESTER 1]	Hours/Week		
Module	**Lec.**	**Tut/ Prac.**	**Cr.**
Clinical Chemistry 2	4	- / 3	5
Immunohaematology 2	4	- / 3	5
Medical Microbiology 3	-	1/ 6	3
Toxicology & Drug Monitoring	1	- / -	1
Research Methodology	3	- / -	3
TOTAL	**12**	**13**	**17**

LEVEL 3 [SEMESTER 2]	Hours/Week		
Module	**Lec.**	**Tut/ Prac.**	**Cr.**
Haematology 2	3	- / 3	4
Histotechnology 2	2	- / 3	3
Med. Microbiology 4	4	- / 6	6
Biostatistics	2	1 / -	3
(Elective	3	- / -	3)
TOTAL	**14**	**13**	**19**

Medical Technology – Level 4

LEVEL 4 [SEMESTER 1]	Hours/week		
Module	**Lec.**	**Tut/ Prac.**	**Cr.**
Principles of Healthcare Management	3	- / -	3
Ethics for Healthcare Professionals	3	- / -	3
Parasitology & Virology	2	- / 3	3
Haematology 3	1	- / 3	2
Biotechnology	2	1 / 3	4
Project *	1	- / -	3
TOTAL	**12**	**10**	**18**

- (Elective may be done in Yr. 3 or Yr.4)

LEVEL 4 [SEMESTER 2]	Hours/week	
Module	**Practicum.**	**Cr.**
Clinical Chemistry	5 weeks-200 hrs.	2.5
Haematology	5 weeks-200 hrs.	2.5
Microbiology	7 weeks-280 hrs.	3.5
Immunohaematology	3 weeks-120 hrs.	1.5
Histopathology	4 weeks-160 hrs.	2.0
TOTAL	**24 weeks 960 hrs**	**12**

UTech's Medical Technology Proficiencies

- The training of Medical Technologists here at UTech incorporates both general and specific proficiencies for which the graduate is responsible.

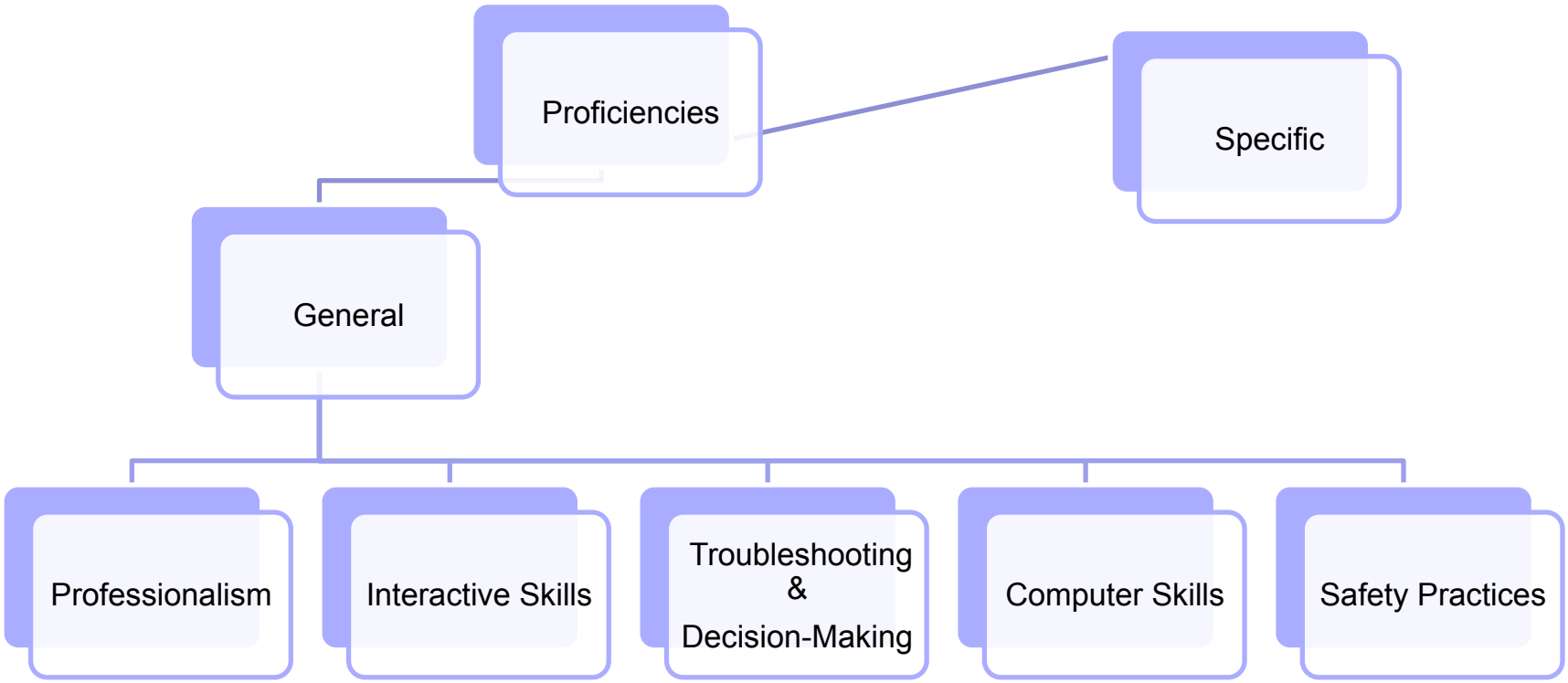
- The proficiencies can be subdivided into:
  - general
  - specific

Definitions

- General proficiencies – indirectly augment the specific proficiencies.

- Specific proficiencies – are derived from the respective disciplines within Medical Technology.

General (& Specific) Proficiencies



General Proficiencies (UTech)

At UTech these are tested under the categories:

- Professionalism
- Knowledge
- Technical Competence

General – Professionalism (8)

….the student should be able to:

1) manage and use time effectively, be dependable and complete work in an organized and efficient manner.
2) strive for improvement in work quality.
3) exercise initiative and independent judgment
4) respond positively to supervision and accept constructive suggestions for improvement in work.

General – Knowledge (5)

….the student should be able to *competently*:

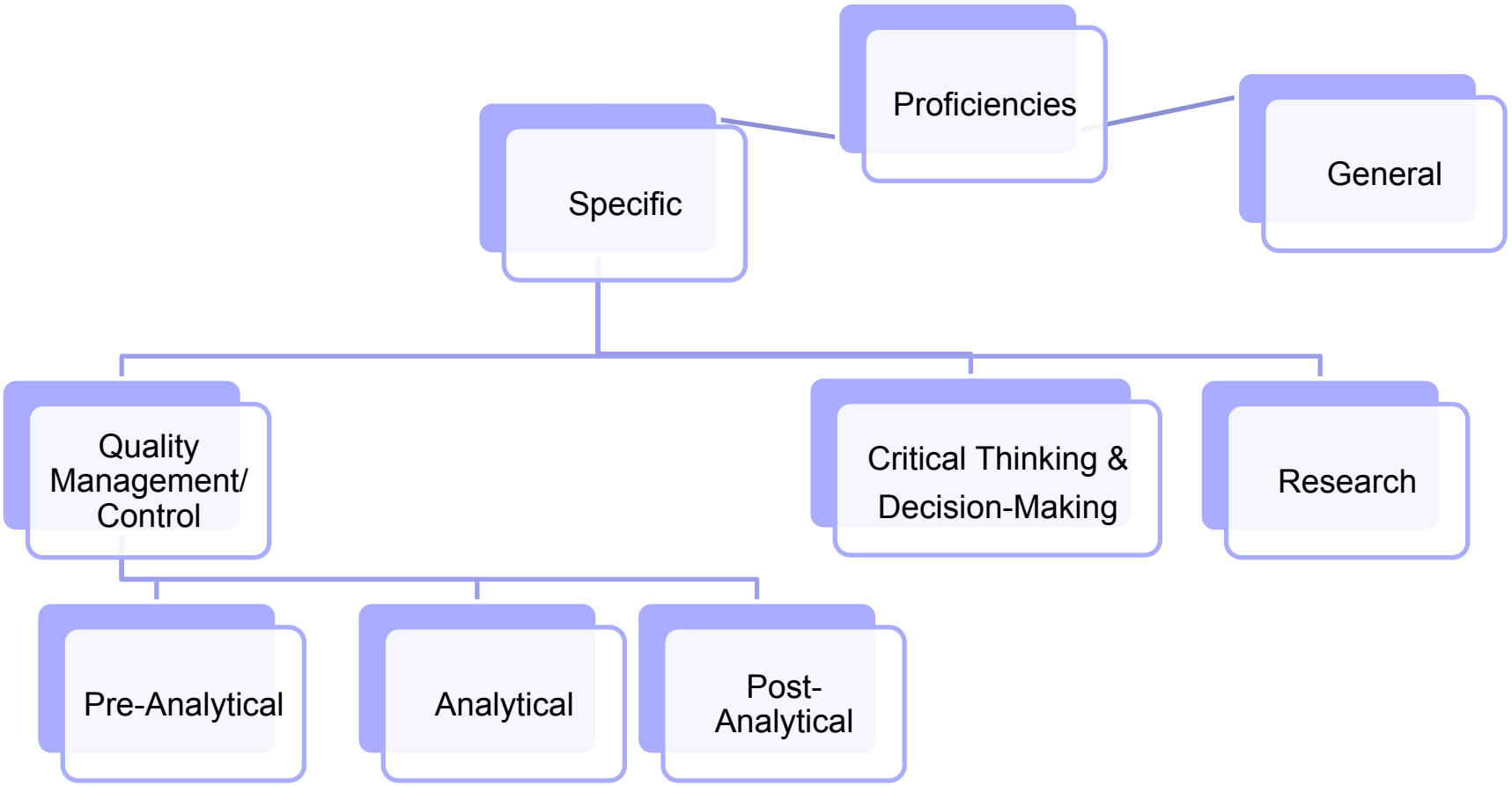
9) demonstrate comprehension of the underlying scientific principles of laboratory testing as well as the technical, procedural and problem-solving aspects.
10) correlate abnormal laboratory data with pathologic states, determines validity of test results and need for additional tests.
11) demonstrate knowledge of and enforce safety regulations.
12) demonstrate knowledge of quality assurance.
13) demonstrate effective communication skills with laboratory personnel based on the scientific knowledge and application of principle.

General – Technical Competence (14)

….the student should be able to *competently*:

14) perform and interpret diagnostic tests.
15) perform and interpret quality control procedures.
16) evaluate computer generated data and troubleshoot problems.
17) select appropriate type of sample and method for testing.

(General &) Specific Proficiencies



Definitions of Specific Proficiencies – Quality Management/Control

- Pre-Analytical
  - adhering to universal standards when obtaining & storing samples.
- Analytical
  - careful observation of testing parameters during analysis.
- Post-Analytical
  - results review, then meticulous documentation of results after testing is complete.

Specific – Medical Microbiology (Bact.)

….the student should be able to *competently*:

28) employ aseptic techniques when handling inoculating instruments, transfer devices, culture tubes and the like.

29) demonstrate caution and proper handling of specimens; recognizes and rejects unsatisfactory specimens.

30) label all media accurately.

Specific – Medical Microbiology (Bact.)

….the student should be able to *competently*:

31) select appropriate instruments and media based on the specimen source.

32) transfer and streak specimen correctly to achieve isolation for pure cultures and colony counts.

33) place specimen in correct conditions for incubation (CO_2, Anaerobic bags, CAMPY bags).

Specific – Medical Microbiology (Cultr.)

….the student should be able to *competently*:

34) Identifies colonial characteristics on primary culture plates.
35) Calculates colony count for urines, sterility checks and catheter tips.
36) Correlates results from broth and plated cultures to determine *appropriate* subsequent steps (e.g. follow-up testing).
37) Correlates results of smears and biochemical tests to correctly identify the organisms.
38) Selects appropriate media to perform biochemical tests; inoculate and appropriately select conditions for incubation.
39) Accurately read results of biochemical tests.
40) Determines appropriate subsequent tests for further identification of organisms.
41) Selects appropriate media and inoculate media for tests.
42) Sets up *relevant* anti-microbial susceptibility testing for the isolated organisms.
43) Operates the BACTEC and Micro Walk-Away instruments properly.
44) Accurately logs and files results in the computer.

Specific – Medical Microbiology (Para.)

….the student should be able to *competently*:

45) Identifies Cestodes, Protozoa, Nematodes and Trematodes in faecal samples.
46) Identifies blood & tissue parasites such as Malaria, Trypanosomes and Filarial worms.
47) Prepares and stains permanent smears using Iron Haematoxylin and Trichrome methods to demonstrate ova, cyst and larval stages of development.
48) Performs the occult blood test on faecal samples.
49) Performs macroscopic, microscopic, saline and iodine preparations as well as concentration methods on relevant samples.
50) Performs relevant staining procedures according to stated protocols for specified samples.

Specific – Medical Microbiology (Sero.)

….the student should be able to *competently*:

51) Accurately performs and interprets serological tests such as TRUST, RPR and VDRL for Non-Treponemal antibodies..

52) Accurately performs and interprets serological tests such as MHA-TP, FTA-ABS and TPPA for Treponemal Antibodies.

53) Accurately performs and interprets tests such as ASTO, CRP, LATEX FIXATION, and WIDAL.

The Way Forward…….

- There is the need for curriculum strengthening and networking, e.g. :
  - Epidemiology,
  - Entrepreneurship,
  - Collaboration,
  - Post-Graduate Studies,
  - Among others…….

THANK YOU