

## Course Syllabus

### Second Semester – 2013/2014

#### General Information

Course name	Course code	Credits	Contact hours
Optical and Laboratory Medical Equipment	BMTS483	2 lecture+1 lab	2 lecture+2 lab

#### Instructors/ Coordinators

	Instructor	Coordinator
<b>Name</b>	Mr. Arimardan Singh	Dr. Bakheet Alrashidi
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#### Text Book

<b>Title</b>	Biomedical Instrumentation: Technology and Applications
<b>Author/Year</b>	R.S. Khandpur / 2004

#### Supplemental materials

Recommended Textbooks and Reference Material	
<b>Title</b>	Encyclopedia of Medical Devices and Instrumentation
<b>Author/Year</b>	John G. Webster / 2010
Electronic Materials (e.g. Web Sites, Social Media, Blackboard, etc.)	
<b>Web sites</b>	<a href="http://www.chm.davidson.edu/java/spec/spec.html">http://www.chm.davidson.edu/java/spec/spec.html</a>
	<a href="http://onlinelabs.in/biology">http://onlinelabs.in/biology</a>

#### Specific Course Information

<b>a. Brief description of the content of the course (Catalog Description)</b>
This course focus on studying optical instrument starting by understanding the optical principles, operation of some laboratory and medical instruments. It covers light microscopy, emission and absorption spectrometry, flame spectrophotometer, flame photometers, endoscope instruments, laser instruments. It also provides an understanding of working principle of automated units, maintenance and calibration. Laboratory information and automation, Chromatography, Electrophoresis, Hematology, Automated chemical analyzers such as Synchron CX4, ACA, ROTO-CHEM, coulter counter.
<b>b. Prerequisites (P) or Co-requisites (C)</b>
None
<b>c. Course type (Mandatory or Elective)</b>
Mandatory

### Specific Goals

#### a. Specific outcomes of instruction

By the end of this course, the student should be able to:

- Recognize the basics of optics applied for medical equipment. (a)
- Demonstrate the working of optical microscope and spectrophotometers. (c)
- Operate commonly used analytical laboratory equipment. (g)
- Identify the errors and discuss the importance of quality control in validation of various analytical equipment. (k)

#### b. Student outcomes addressed by the course

a	b	c	d	e	f	g	h	i	j	k
✓		✓				✓				✓

### Brief list of topics to be covered

Topics	No. of Weeks	Contact hours
Introduction to Optics	1	4
Emission and Absorption Spectrometry	2	8
Flame Spectrometry	1	4
Laser Instruments	1	4
Chromatography	1	4
Electrophoresis	2	8
Hematology	1	4
Chemical Analyzers	1	4
Coulter Counter	2	8
Application of Laser	1	4
Applications of Optical Instruments	2	8