Course Change Request

New Course Proposal

Date Submitted: 12/19/18 12:33 pm

Viewing: **MLAB 417 : Advanced Methods in Clinical Molecular Biology**

Last edit: 12/19/18 12:33 pm

Changes proposed by: dpolayes

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
Ann Verhoeven	3-1572	averhoev@gmu.edu

Effective Term: Fall 2019

Subject Code: MLAB - Medical Laboratory Science **Course Number:** 417

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Advanced Methods in Clinical Molecular Biology

Banner Title: Adv Met in Clinical MoBio

Will section titles vary by semester? No

Credits: 1-11

Schedule Type: Lecture w/Lab

Hours of Lecture or Seminar per week: 2

Hours of Lab or Studio per week: 2

Repeatable: May be repeated within degree (RD) **Max Allowable Credits:** 11

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

In Workflow

1. **MLAB Undergraduate Representative**
2. **SC Curriculum Committee**
3. SC Associate Dean
4. Assoc Provost-Undergraduate
5. Registrar-Courses
6. Banner

Approval Path

1. 12/19/18 12:33 pm Larry Rockwood (lrockwoo): Approved for MLAB Undergraduate Representative

Catalog Description:	This course applies the fundamentals of nucleic acid testing to advanced methods commonly used in the contemporary clinical and research laboratory. Topics include PCR, Transcription-Based Amplification, Probe Amplification, Branched DNA, Hybrid Capture; Amplification: Signal , Cleavage-Based, Cycling Probe; Sequencing: Direct, Next Gen, Pyrosequencing, Bisulfite, RNA Sequencing; and Bioinformatics; Human Genome Project
Justification:	A new concentration in Medical Laboratory Science (MLAB) is being offered. This class will be required for students who choose the concentrations offered at our affiliated program at Quest Diagnostics.
Does this course cover material which crosses into another department?	No
Learning Outcomes:	
Attach Syllabus	BIOL 417 Syllabus Advanced Methods.pdf
Additional Attachments	
Staffing:	Quest Diagnostics
Relationship to Existing Programs:	An Affilate Program
Relationship to Existing Courses:	none
Additional Comments:	
Reviewer Comments	

Key: 16283

Syllabus

Advanced Methods in Clinical Molecular Biology

Instructor:

Team Taught:

Masimichi Ito, PhD.; Murali **Muralidharan, PhD.,** Meghan Starolis, PhD., Chris Spence, PhD.

Guest Lecturers:

Nicole Christacos, PhD.; Harvey Vandenburg, MHA, MT (ASCP) DLM

Advanced Methods in Clinical Molecular Biology

This course applies the fundamentals of nucleic acid testing to advanced methods commonly used in the contemporary clinical and research laboratory. Topics include PCR, Transcription-Based Amplification, Probe Amplification, Branched DNA, Hybrid Capture; Amplification: Signal , Cleavage-Based, Cycling Probe; Sequencing: Direct, Next Gen, Pyrosequencing, Bisulfite, RNA Sequencing; and Bioinformatics; Human Genome Project

Molecular Diagnostics: Fundamentals, Methods, and Clinical Applications, Lela Buckingham, 2nd edition

Grading:

Exam Average (4 exams) 100%

A = 90% and above

B = 80% - 89%

C= 70%- 79%

Failing: less than 70%

Students with less than 70% will be withdrawn from the program and subject to disciplinary action.

Course Agenda:

Week #		Date	No. of Hours	Time	Subject	Lecturer
Week 12	M		2	10am-12pm	PCR	Dr. Starolis
	M		3	2pm-5pm	Chapter 6 Review and Exam	Harvey Vandenburg
	TU		2	2pm-4pm	Transcription-Based Amplification	Dr. Muralidharan
Week 13	M		2	2pm-4pm	Probe Amplification	Dr. Muralidharan
	W		2	10am-12pm	Branched DNA, Hybrid Capture	Dr. Starolis
Week 14	W		2	2pm-4pm	Amplification: Signal , Cleavage-Based, Cycling Probe	Dr. Muralidharan
Week 15	M		3	830am-1130am	Chapter 7 Review and Exam	Harvey Vandenburg
	W		2	2pm-4pm	Direct Sequencing; Manual and Automated	Dr. Ito
Week 16	M		2	2pm-4pm	Sequencing Continued: Next Gen	Dr. Ito
	W		2	2pm-4pm	Sequencing Continued: Pyrosequencing, Bisulfite	Dr. Spence
	TH		1	2pm-3pm	RNA Sequencing	Dr. Spence
Week 17	M		1	2pm-3pm	Bioinformatics; Human Genome Project	Dr. Muralidharan
	W		3	2pm-5pm	Chapter 10 Review and Exam	Harvey Vandenburg
Week 18	M		2	2pm-4pm	Detection of Gene Mutations 1	Dr. Muralidharan/ Dr. Christacos
	TU		2	2pm-4pm	Detection of Gene Mutations 2	Dr. Muralidharan/ Dr. Christacos
	W		2	10am-12pm	Detection of Gene Mutations 3	Dr. Christacos

Week #		Date	No. of Hours	Time	Subject	Lecturer
Week 20	M		1	3pm-4pm	Detection of Gene Mutations 4	Dr. Muralidharan/ Dr. Christacos
	TU		2	2pm-4pm	Detection of Gene Mutations 5	Dr. Muralidharan/ Dr. Christacos
	W		2	10am-12pm	Detection of Gene Mutations 6	Dr. Muralidharan/ Dr. Christacos
Week 21	T		3	2pm-5pm	Chapter 9 Review and Exam	Harvey Vandenburg