

BMB 528 – Molecular Biology and Medical Genetics

Fall Semester 2 - 2019

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Notice to Students: Although course syllabi at MSUCOM have a consistent format, vitally important details differ by course. For this reason, you must read the syllabus thoroughly at the onset of each course to know what the course will provide and what is expected of you.

Section 1 – Course Information

Course Description

BMB 528 is a 2 credit hour course that provides students with knowledge of basic principles of molecular biology and human medical genetics, storage and expression of genetic information, and transmission of genetic information to progeny.

Course Goals

There are two main objectives in this course: (1) to instruct students in the basic concepts, principles, and language of molecular biology and human genetics; and (2) to equip students to analyze diseases and the responses to diseases in molecular and genetic terms. Many concepts and principles will be illustrated using examples from clinical practice. We anticipate that this training will enable students to recognize and solve genetic problems encountered in subsequent clinical training and experience.

Specific instructional objectives are provided within each lecture or other learning activity of this course. These objectives represent a subset of the core competencies in genetics that are expected of all health professionals, as put forth in guidelines from the American Society for Human Genetics and the National Coalition for Health Professional Education in Genetics.

College Program Objectives

In addition to the above course-specific goals and learning objectives, this preclerkship course also facilitates student progress in attaining the College Program Objectives. Please refer to the complete list provided on the [MSUCOM Overview of Program](#).

Course Coordinator

(Note - Preferred method of contact is shown in italics)

Name: Martha Faner, Ph.D.

Phone: 313-578-9669

Email: fanermar@msu.edu (preferred method)

Address: CG-90, DMC

Course Faculty

Name	Email	Phone	Site
Andrea Amalfitano, DO, PhD	amalfit1@msu.edu	517-355-9616	EL
Martha Faner, PhD	fanermar@msu.edu	313-578-9669	DMC
Jin He, MD, PhD	hejin1@msu.edu	517-353-0613	EL
Courtney Kokenakes, MS, CGC	kokenakc@karmanos.org	313-576-9087	DMC
Raquel Ritchie, PhD	rritchie@msu.edu	586-263-6296	MUC
John L. Wang, PhD	wangj@msu.edu	517-353-9542	EL
Carol Wilkins, PhD	mindockc@msu.edu	517-353-4927	EL

Curriculum Assistants

Site	Name	Email	Phone
East Lansing	Becky Brandt	Brandtb2@msu.edu	517-884-3880
DMC	Alysia Gordon - LEAD	John1329@msu.edu	313-578-9629
MUC	Rose Shubeck	shubeckr@msu.edu	586-226-4788

Lines of Communication

- For administrative aspects of the Course: contact the course coordinator.
- For content questions relating to a specific lecture or topic: contact the faculty presenter for that specific portion of the course or your SE MI on-site instructor.
- For absences and missed exams, see policy on Absences from Mandatory Class Sessions and Examinations/Assessments below. Requests for an excused absence must be submitted via the [student portal](#).
- Please set your notifications in D2L to immediate to receive posted News announcements. You may choose to receive notifications by email or SMS.

Office Hours

Office hours for each campus are announced in site-specific folders under the Content tab of the D2L course website. Students are also encouraged: (a) to address questions to instructors via the E-mail system; (b) to seek individual consultation with the lecturer or the on-site instructor by appointment throughout the semester; and (c) to use the discussion board on D2L course website.

Course Web Site

The URL for the Course website is: <https://d2l.msu.edu>

You should pay attention to these MAIN items at this website:

- **Announcements** – Course-related communication to the class will be made here. You should check for announcements on a daily basis.
- **Syllabus** – Contains the course syllabus with information about the instructional teams, textbooks, exam dates, grading system, rules and regulations, etc.
- **Content** – Course-related materials.
- **Discussion Boards** – Lists of “submitted” questions organized by lecture topic. The discussion board will be primarily student led and periodically monitored by faculty. Additionally, questions emailed to the lecturer will be de-identified and posted. It is highly recommended that you check the discussion forum prior to sending a question to faculty as it is very likely that you are not the only student with questions – your question and others may already be available for your review – saving you time.

Although each visit to any section of D2L by an individual student is “tracked” by the computer and the instructors of the course will have access to such information, we do not intend to use it.

Textbooks and Reference Materials

Required

- BMB528 FS19 Course Pack
- Turnpenny and Ellard, Emery's Elements of Medical Genetics. 15th ed. Elsevier: Churchill Livingstone. [978-0702066856]
- Ferrier, Lippincott's Illustrated Reviews: Biochemistry. 7th ed. Wolters Kluwer: Lippincott, Williams, and Wilkins. [978-1496344496]

Optional

- Jorde, Carey and Bamshad, (2016) Medical Genetics. 5th ed. [978-0323188357]
- Nussbaum, McInnes, and Willard, (2016) Thompson and Thompson Genetics in Medicine. 8th ed. [978-1437706963]

Type of readings for the course:

- **Required Reading:** You are responsible for reading and digesting the content of this material even if it is not covered in class. **You will be tested on this content.** Your success in some of the lectures/activities will depend on you coming prepared. Therefore, it is important that you complete any preparatory readings prior to the lecture/activity to which they are assigned.
- **Suggested/Clarification Reading:** These are optional, for your enrichment. If anything in a particular lecture or required reading is not clear, you can seek clarification here.

A listing of suggested and required readings can be found at the beginning of the course pack.

Additional instructional materials, including the tutorial, required readings, problem sets, and computer-based instructional aides, may be provided in the learning centers of COM at each site, as links at the course website, or as handouts at lecture sessions. **These materials are intended to be an integral aspect of the course; instruction in some course objectives may be accomplished entirely through these exercises and experiences, and thus might not be explicitly addressed during lectures. Students are strongly encouraged and expected to make use of them.**

Opportunities to confirm your understanding:

Problem sets and their answers will be provided on the course D2L site. These problem sets are designed both to help the students grasp key concepts and connections and to provide practice in the skills and tasks defined by the educational objectives. Some problems may resemble typical exam questions in style and depth; others will be more open-ended or explorative. These problem sets will not be graded, but will provide students with an opportunity to assess their mastery of the objectives and to identify concepts that require further study.

Four practice exams, one for each BMB 528 Unit Exam, will be available for you to take using computer-based testing (Examplify). Information on when the practice exams will be available and how to access them will be posted in the course D2L site and/or will be sent via email.

Supplemental Instruction (SI):

Supplemental Instruction is an academic assistance program that utilizes peer-assisted study sessions. The SI sessions are regularly-scheduled informal review sessions in which students compare their class notes, discuss assigned readings, practice problem solving, develop organizational tools, and predict test items. The participants learn how to integrate course content and study skills while working together. The sessions are facilitated by “SI leaders”, students who have previously taken the course, done well in it and are model students. The main purpose of this program is to improve students’ grades and their overall learning ability. SI session attendance is OPTIONAL (there will be no points associated with SI session attendance).

Schedule for SI sessions:

East Lansing

Friday, September 6, 4:00-6:00 pm- E105, E109, E202
Friday, September 20, 4:00-6:00 pm- E105, E109, E202
Friday, October 4, 2:00-4:00 pm - E105, E109, E202
Friday, October 18, 2:00-4:00 pm - E105, E109, E202

Macomb

Friday, September 6, 4:00-6:00 pm- UC3 208
Friday, September 20, 4:00-6:00 pm – UC3 208
Friday, October 4, 2:00-4:00 pm – UC3 208
Friday, October 18, 2:00-4:00 pm – UC3 208

DMC

Friday, September 6, 4:00-6:00 pm- G030
Friday, September 20, 4:00-6:00 pm - G030
Friday, October 4, 2:00-4:00 pm - G030
Friday, October 18, 2:00-4:00 pm - G030

Course-based Academic Support

The course faculty are here to facilitate your learning. The large number of students in this course (about 300) necessitates a degree of formality. Also, since your schedules are very full, we must adhere rigidly to the lecture, small group and lab times assigned to this course. However, within these constraints, the needs of individual students will be accommodated whenever possible. Please feel free to contact the Course Coordinator with any personal issues you may have involving this course.

Additional academic support resources can be accessed here: [MSUCOM Office of Academic Success and Career Planning](#).

Courses begin and end dates

BMB 528 begins on 8-27-19 and ends on 10-21-19. See addendum for detailed daily course schedule.

Exams/Assessments

The successful achievement of learning objectives will require knowledge and skills acquired in other portions of the overall MSUCOM educational program. Students will be expected to apply concepts and vocabulary learned in other courses to problem-solving for exams/assessments in this course.

In order to maintain security of assessments, you may NOT post questions on the discussion board regarding exam questions or quiz questions. Kindly email your questions to the course coordinator.

The educational objectives, defined in the Course Pack for each section of this course, will serve as the basis for evaluating student performance. Mastery of these objectives will be expected whether those topics have been discussed in lecture sessions or explored using other resources (tutorial recordings, assigned reading, computer-based instructional aids). Student attainment of these objectives will be evaluated using four quizzes, four exams, REEF polling and two "flipped classroom" sessions.

a) Each quiz will contain 5 questions, to be completed in the first 8 minutes of the class in the lecture venue on the dates stated (see Table below). The quizzes will be administered using your personal computer-based testing device. The detailed "BMB 528 Quiz Protocol" is as follows:

1. Ensure that you have Examplify installed in your personal computer-based testing device. You must DOWNLOAD the quiz to your personal computer-based testing device prior to entering the classroom to take the quiz (preferably by one hour PRIOR to the start time of the quiz). The quiz will be available for downloading at least 24 hours prior to the quiz. THERE IS NO CHECK-IN FOR THE QUIZZES—JUST COME IN AND BE SEATED (Please be prompt and punctual; late arrivals will NOT be allowed to take the quiz.)
2. You must be in your seat 5 minutes prior to the start of the quiz.
 - a. Have your personal computer-based testing device properly charged, the quiz downloaded, and Examplify up and running.
 - b. Put away all your books, notes and papers, etc.
 - c. IN EAST LANSING: Students MUST sit in every other seat. Starting with the aisle seat for any given row, sit in every other seat.
 - d. scratch paper will not be given for these quizzes.
3. Absences:
 - a. If a student is not in the room before the door closes, he/she will be considered absent from the quiz. This includes late arrivals.
 - b. Students who are absent may request an excused absence as defined by the Excused Absence Policy and related procedures.
 - c. If an excused absence is granted, the student will be permitted to take a make-up quiz at a date, time, and location and in a format determined by the course coordinator.
 - d. If an excused absence is not granted, the student will be permitted to take a make-up quiz but with a penalty as defined below.
 - i. On the first unexcused absence, there will be a 20% deduction in the quiz score.
 - ii. Any further unexcused absences from a quiz will result in a score of zero for the quiz.
4. At 5 minutes prior to the start of the lecture (e.g. 7:55 am), the lecturer-of-the-day will display the official time (for all sites) on the screen. Establish Polycom connection with all sites and make sure "content" is transmitted.

5. Once the room is quiet and any announcements are made, the passcode will be displayed. Students will type in the passcode and begin immediately. The passcode will be removed prior to the top of the hour.
6. If any problems are encountered starting, during, or submitting the quiz, please raise your hand immediately to summon a proctor.
7. Exemplify will automatically allow you 8 minutes to take the quiz. The clock displayed on the screen is only for students taking paper versions of the quiz due to computer problems. We will call an end to the quiz at 8 minutes after the hour (e.g. 8:08 am) and all quizzes must be submitted. PLEASE, REMAIN IN YOUR SEATS AND KEEP QUIET.
8. ALL STUDENTS please turn your personal computer-based testing device towards the front of your classroom, so the proctors can verify that all students successfully submitted their quiz (i.e. we will see the "green screen"). If you are taking a paper copy of the quiz, make sure your name and PID are on the top of the quiz and turn it in to a proctor before you leave the room.
9. If you do NOT see the green screen, please STAND UP.
10. As soon as all the sites report to the lecturer that all the quizzes are completed, the lecturer will begin his/her lecture for that day immediately.

b) Unit exams 1, 2, 3 and 4, will contain 21, 24, 24 and 24 questions respectively from BMB 528 (see Table below).

c) Students that wish to inquire about the validity of an exam/quiz question or its answer must contact Dr. Faner within 7 calendar days of the exam display session or quiz key posting.

d) The Flipped Classroom: Cystic Fibrosis Case Discussion session requires students to do preparatory work at home and the classroom session will consist of group discussion and i>Clicker questions. The preparatory work at home will consist of reading a case. There will be individual readiness and post-exercise assessments, contributing a total of 7 points to the Course Grade. We will be using participation in i>Clicker questions as the mechanism to monitor attendance throughout the session. **You will not be eligible to earn points on the Post Exercise Quiz (PEQ) unless you participate in the i>Clicker Reef questions throughout the session.**

e) The Flipped Classroom: Current and Future Approaches to Genetic Disorders session requires students to do preparatory work at home and the classroom session will consist of student groups presenting to their peers what they have learned. The preparatory work at home will include: (i) watch a recording of a mini-lecture (~15 minutes); (ii) read an assigned article; and (iii) take notes on key points to contribute to a 1-page summary of what was learned. There will be individual readiness and post-exercise assessments, contributing a total of 6 points to the Course Grade. An additional point for this session will be associated with satisfactory completion and submission of a 1-page primer created with your POD. We will be using participation in i>Clicker Reef questions as the mechanism to monitor attendance throughout the session. **You will not be eligible to earn points on the Post Exercise Quiz (PEQ) unless you participate in the i>Clicker Reef questions throughout the session.**

f) In-Lecture i>Clicker Reef points: Each student can potentially earn a maximum of 3 points (counting toward the 130 total points in the Course) by coming to class and participating in the i>Clicker Reef session.

- a. There will be one i>Clicker Reef session every day for which there is a lecture in this Course except for days in which there is a quiz (a total of 21 i>Clicker Reef sessions).

- b. THREE of these i>Clicker Reef sessions will have one point associated with the session. However, the three sessions that count will be disclosed only at the end of the course.
- c. To get the point associated with an i>Clicker Reef session, you will have to answer the **attendance question** and **at least one** of the "scientific content" questions in the i>Clicker Reef session correctly.
- d. The number of "scientific content" questions for each i>Clicker Reef session may vary.
- f. The attendance question and the i>Clicker Reef session may take place at any time during the class hour.
- g. The answers to the i>Clicker Reef questions will be posted on the course D2L site by 5 pm on the day of the i>Clicker session.
- h. No make-up experiences will be provided should you not attend a session.
- i. For example, if you come to class and participate in an i>Clicker Reef session that counts, you may receive one point — as long as you answer the attendance question and at least one of the “scientific content” questions correctly for that session. If you attend class every day and participate in all of the i>Clicker Reef sessions, you significantly increase your chances of earning the maximum 3 points for these i>Clicker Reef sessions.

Assessments	Projected Points	Material to be Covered
Quiz #1 9/4/19	5	Sessions 1-5
Unit Exam 1 9/9/19	21	Sessions 1-7
Quiz #2 9/16/19	5	Sessions 8-11 plus Tutorial: Mendelian Modes of Inheritance and Calculations
Flipped Classroom: Cystic Fibrosis Case Discussion 9/19/19	7	Cystic Fibrosis Case and Class Discussion
Unit Exam 2 9/23/19	24	Sessions 1-15
Quiz #3 9/30/19	5	Sessions 16-19
Unit Exam 3 10/7/19	24	Sessions 1-23
Quiz #4 10/15/19	5	Sessions 24-27
Flipped Classroom: Current and Future Approaches to Genetic Disorders 10/17/19	7	Approaches to correction of genetic conditions
Unit Exam 4 10/21/19	24	Sessions 1-30
In-Lecture i>clicker Reef 8/27-10/18	3	Sessions 1-31

Course Grades

A student's course grade is determined by the following formula:

$$\frac{(\text{Unit Exams 1, 2, 3, 4} + \text{Quizzes 1, 2, 3, 4} + 2 \text{ Flipped Classrooms} + \text{In-Lecture i>clicker})}{(130)} \times 100\% \\ = \text{Final Percent Score}$$

- **P-Pass**—means that credit is granted and that the student achieved a level of performance judged to be satisfactory by the instructor. To obtain a “P” grade for this course, a student must obtain 70%.
- **N-No Grade**—means that no credit is granted and that the student did not achieve a level of performance judged to be satisfactory by the instructor. A student who earns an accumulated score below 70% will receive an “N” grade.
- Remediation - Consistent with COM policy (see Remediating or Repeating a Course under Section 2 below), a student receiving an “N” grade will have the opportunity to remediate the course provided the following eligibility criteria are met:
 - Earn a final score in the course of 60% or greater, and
 - Your BMB 528 Unit Exam Average (the average of UE1, UE2, UE3, and UE4) must be equal to or better than 65%.
- The Remediation Exam will be offered on Thursday, January 2 and Friday, January 3, 2020. It will consist of 60 questions, comprehensive for the course. Passing is 70%. Students failing the Remediation exam will need to retake BMB 528, if eligible. Please refer to the remediation policy information provided in Section 2 of this syllabus for information on College requirements.

Student Evaluation of the Course

We want your feedback on how to improve this course.

- Informal Feedback: Feel free to approach the Course Coordinator, Dr. Martha Faner, or any of the other course faculty with your reactions and suggestions.
- Formal Evaluation: In addition to the above, we ask every student in the class to complete formal on-line course evaluation upon conclusion of the course. Student feedback provides Course Coordinators with valuable information regarding their performance, the performance of their colleagues, and the quality of the course. The information gained from these evaluations is used to continuously improve future offerings of this course. Students can access the evaluation system at: [MSUCOM Pre-clerkship Evaluation System](#).

Section 2 – Policies

Academic Honesty and Professionalism

Every student is responsible for their behavior and is expected to adhere to all MSU and MSUCOM policies of academic honesty and professionalism, as outlined in the MSUCOM Student Handbook and the MSU Medical Student Rights and Responsibilities. These documents may be found on the MSUCOM website.

Incidents of academic dishonesty or professional misconduct will be addressed by the faculty, administration or staff; such action may include, but is not limited to: giving a failing grade, referring a student for judicial review, directing the student to the Associate Dean of Medical Education, evaluation by the Committee on Student Evaluation, and other actions outlined in the Medical Student Rights and Responsibilities document.

Absences from Mandatory Class Sessions and Examinations/Assessments

It is the responsibility of each student to know and comply with the MSUCOM policy regarding absences from mandatory sessions and examinations. This policy may be found in the MSUCOM Student Handbook on the MSUCOM website. Requests for an excused absence must be submitted via the [student portal](#).

Computer-Based Testing

It is the responsibility of each student to know and comply with the MSUCOM policy on computer-based testing. This policy may be found in the MSUCOM Student Handbook on the MSUCOM website.

Medical Student Rights and Responsibilities

If problems arise between instructor and student, both should attempt to resolve them by informal, direct discussions. If the problems remain unsolved, the Associate Dean for Medical Education and/or the MSU Ombudsperson may be consulted. The MSU Medical Student Rights and Responsibilities (MSRR) document defines processes for additional steps, including submission of a formal grievance. The MSSR may be found in the MSUCOM Student Handbook and online at splife.studentlife.msu.edu.

Reef Polling (iClicker Cloud) Policy

It is the responsibility of each student to know and comply with the Reef Polling (iClicker Cloud) Policy. This policy may be found in the MSUCOM Student Handbook. If you forget your device or if it does not work, for whatever reason, no make-up experiences will be provided, and no points will be given. If attendance is taken, you will be expected to arrive in class on time and to stay for the duration of the assigned activity.

Remediation

The MSUCOM Policy for Retention, Promotion and Graduation states that a student must complete each required course to progress in the curriculum. A student who completes a course and receives an “N” grade will have that grade recorded on their official transcript and must meet the course requirement by successfully remediating or repeating the course.

A student will be eligible to attempt remediation of the course if they meet the criteria described in the “Course Grades” section of this syllabus. A student who is not eligible to attempt remediation or fails the remediation must retake the course. This policy and the process by which an eligible student may remediate a course may be found in the MSUCOM Student Handbook on the MSUCOM website.

Requests for Special Accommodations

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at

<https://rcpd.msu.edu>. Once eligibility for an accommodation has been determined, you may be issued a Verified Individualized Services and Accommodation (VISA) form. Please present the VISA to Nancy Thoma, thoman@msu.edu, 965 Wilson Road, Room 333 at the start of the term and/or two weeks prior to the assessment event (test, project, labs, etc.). Requests received after this date will be honored whenever possible.

Title IX Notifications

Michigan State University is committed to fostering a culture of caring and respect that is free of relationship violence and sexual misconduct, and to ensuring that all affected individuals have access to services. For information on reporting options, confidential advocacy and support resources, university policies and procedures, or how to make a difference on campus, visit the Title IX website at titleix.msu.edu.

Limits to confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, may not be able to maintain confidentiality when it conflicts with their responsibility to report certain issues to protect the health and safety of MSU community members and others. Instructors must report the following information to other University offices (including the Department of Police and Public Safety):

- Suspected child abuse/neglect, even if this maltreatment happened when you were a child;
- Allegations of sexual assault, relationship violence, stalking, or sexual harassment; and
- Credible threats of harm to oneself or to others.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the MSU Counseling and Psychiatric Services.

Please note: In the event of any unforeseen situations, the instructor(s) may make changes to any portion of the syllabus, within reason and without notice. If such a situation arises, the instructor(s) will inform you as soon as possible of the necessary adjustments/updates. It is the student's responsibility to make note of these adjustments/updates

Addendum: Course Schedule

Course schedule will be posted as a separate document on the same web page as this syllabus.