# MGG 7660-Winter Semester 2017
## Practical Applications of Genetic Counseling

**Course Description:** This course will provide a foundation for understanding and applying the practical aspects of genetic counseling in a clinical setting. It will prepare students for their clinical rotations by introducing and practicing a variety of clinical genetic counseling skills in reproductive genetics, pediatric genetics, adult genetics and cancer genetics. This course will build on topics covered in Principles of Genetic Counseling. The components of the course will include lectures, in-class participation and activities, take home assignments and role plays. Class will be held on Wednesdays from 8:30am to 11:00am in 2367 Scott Hall expect where noted on the syllabus.

**Course Directors:** Erin Carmany, MS  
[ecarmany@med.wayne.edu](mailto:ecarmany@med.wayne.edu)  
(313) 577-9138  
Tressa Orthmeyer, MS  
[torthmey@med.wayne.edu](mailto:torthmey@med.wayne.edu)  
(248) 990-1833  
Nancie Petrucelli, MS  
[petrucel@karmanos.org](mailto:petrucel@karmanos.org)  
(313) 576-8704

**Office Address:** 2375 Scott Hall  
**Office Hours:** Available by appointment

**Additional Course Faculty:** Leigh Anne Flore, MD  
Mitchel Williams, MD  
Yamuna Sanil, MD

**Grading:**  
- 25% Reproductive Genetics section grade*  
- 25% Pediatric/Adult Genetics section grade*  
- 25% Cancer Genetics section grade*  
- 25% Standardized patient session  

*The grade for each section will be based on a combination of take-home assignments and class participation. Grade composition will be discussed in detail during each section of the course.

- Class attendance is required.  
- Any late assignments will have a 10% per day reduction in final points.

**Grading Scale**  
93-100%=A; 90-92%=A-; 87-89%=B+; 83-86%=B; 80-82%=B-; 79 or less=C

**Course Materials:**  
- See provided CDs/Blackboard for additional required and optional readings
**Course Objectives:** The overall objective of this course is to increase the student’s ability to apply practical knowledge based skills and genetic counseling concepts as they relate to the specific areas of genetics including reproductive genetics, pediatric genetics, adult genetics and cancer genetics.

Reproductive Genetics Objectives:
- Review medical records for information pertinent to reproductive genetics referral indications.
- Efficiently obtain comprehensive family and reproductive histories appropriate for the reproductive genetics setting.
- Discuss and utilize strategies for managing a reproductive genetic counseling case.
- Examine key concepts and approaches to carrier screening for ethnicity-based genetic diseases.
- Familiarize students with various methods of screening, imaging and diagnosis used in reproductive genetics including all associated risks, benefits and limitations.
- Explore recent advances in genetic testing methodologies applicable to reproductive genetics and their associated challenges and ethical concerns.
- Explore special topics related to reproductive genetics, including, but not limited to, fetal therapies, adoption and termination of pregnancy.

Pediatric Genetics Objectives:
- Review medical records for information pertinent to the pediatric genetics referral indication.
- Efficiently obtain a comprehensive history including chief complaint, history of present illness, pregnancy history, developmental history, past medical history, social history and review of systems with emphasis on information pertinent to reason for referral.
- Recognize normal childhood development and identify signs suspicious for abnormal/delayed childhood development.
- List examples of common developmental assessment tools.
- Utilize the Denver Developmental Assessment screening tool appropriately.
- Summarize the special education process and resources/services available to children of all ages.
- Recognize the importance that a general physical examination, neurologic examination, cardiac evaluation and dysmorphology examination play in the diagnostic process.
- List the components of a physical examination and some of the common dysmorphic features encountered in a genetic examination.
- Appreciate the logistical issues involved in genetic testing and identify factors that influence laboratory choice.
- Apply knowledge of genetic laboratory testing to identifying the appropriate testing to order in a diagnostic clinical situation.
Cancer Genetics Objectives:
- Review cancer epidemiology, etiology, terminology, and biology.
- Detail various cancer genetics related topics including, what is cancer, cancer is genetic, but rarely inherited, genes, chromosomes, proteins, and mutations as they relate to cancer, hereditary, sporadic, and familial cancer, red flags of hereditary cancer, and the different types of cancer genes.
- Understand the role of pathology in hereditary cancer and how to interpret oncology pathology reports.
- Appreciate the medical management options for various hereditary cancer syndromes.
- Efficiently collecting a cancer family history.
- Understand how to interpret a cancer family history both qualitatively using various testing criteria and quantitatively using various models.
- Appreciate the role of next generation sequencing panels in cancer genetics.

This course will prepare the student to be a practicing genetic counselor by addressing several ABGC Practice Based Competencies including:
- **Domain I: Genetic Expertise and Analysis**
  - 1a-b, 3a-e, 4a-f, 5a-d, 6a,b,c,e, 7c,d
- **Domain II: Interpersonal, Counseling and Psychosocial Skills**
  - 11a,d
- **Domain III: Education**
  - 14c,d,e,f 15a,b,c,
- **Domain IV: Professional Development and Practice**
  - 19a,b, 20a,b,d, 22a,b,c
## Course Syllabus:

<table>
<thead>
<tr>
<th>Wednesday</th>
<th>Topics</th>
<th>Student Activity</th>
<th>Readings/Assignments</th>
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| January 11th, 8:30 – 11 am | Discuss Syllabus and Grading Medical Record Review | In Class Activity: Down Syndrome Case-Reviewing and Organizing Medical Records | o A Guide to Genetic Counseling: Chapter 8 "The Medical Genetics Evaluation" pages 255-267  
 o A Guide to Genetic Counseling: Chapter 4 "A Guide to Case Management" pages 93-106  
 o Review Principles lecture: "Obtaining and Reviewing Medical Records"  
 o PG Reference #2c |
| Thursday (note day) | Medical Genetics Physical Examination | Take Home Assignment | o A Guide to Genetic Counseling: Chapter 8 pages 268-281  
 o PG Reference #1d |
| Wednesday January 25th, 8:30 – 11 am | Taking a Developmental History Developmental Assessment Tools Introduction to Special Education and Developmental Services | In Class Activity: Practice with Denver Developmental Assessment | o PG Reference #1a  
 o PG Reference #1b  
 o PG Reference #1c  
 o PG Reference #1e |
| Wednesday February 1st, 8:30 – 11 am | Overview of Diagnostic Laboratory Testing | Take Home Assignment | o A Guide to Genetic Counseling: Chapter 4 “A Guide to Case Management” pages 113-122  
 o Review Principles lecture: "Genetic Testing"  
 o PG Reference #3b  
 o PG Reference #4a  
 o PG Reference #4b |
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<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Topic</th>
<th>Activities</th>
<th>References</th>
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<tr>
<td>Wednesday 8th Feb</td>
<td>8:30–10:30 am</td>
<td>Role Play</td>
<td>Take Home Assignment - Write a consult letter with history components and counseling section</td>
<td>PG Reference #4c</td>
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<td>PG Reference #4d</td>
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<tr>
<td>Wednesday 8th Feb</td>
<td>10:30–11:30 am</td>
<td>Introduction to the Cardiac Examination and Diagnostics</td>
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<td>Template of PG consult letter</td>
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<td>Examples of PG consult letter and counseling section</td>
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<td>NSGC Toolkit: Reading Cardio Medical Records</td>
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<td>Wednesday 15th Feb</td>
<td>8:30–10:30 am</td>
<td>Cancer Epidemiology and Etiology</td>
<td>In Class Activity: Contrast Different Cancer Genes</td>
<td>CA Reference #1-5</td>
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<td>Introduction to Cancer Terminology</td>
<td>Take Home Assignment - Write script explaining various cancer related topics for use in counseling</td>
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<td>Cancer Biology</td>
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<td>Wednesday 22nd Feb</td>
<td>8:30–10:30 am</td>
<td>Role of Pathology in Hereditary Cancer</td>
<td>In Class Activity: Pathology Report Review</td>
<td>CA Reference #1-10</td>
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<td>Medical Management of Hereditary Cancer</td>
<td>Take Home Assignment - Reviewing pathology reports</td>
<td>CA Reference #1-11-18 for review of various risk assessment tools, which will be discussed next class.</td>
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<td>Wednesday 1st Mar</td>
<td>8:30–11 am</td>
<td>Collecting a Cancer History</td>
<td>In Class Activity: Orientation to various risk assessment tools/NCCN criteria</td>
<td>CA Reference #1-4</td>
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<td>Interpreting a Cancer History</td>
<td>Take Home Assignment - Using cancer risk assessment models/Interpreting NCCN criteria</td>
<td>CA Reference #11-24</td>
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<td>Selecting the Most Appropriate Genetic Test</td>
<td>- Using cancer risk assessment models/Interpreting NCCN criteria</td>
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<td>- Selecting the most appropriate genetic test</td>
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<td>- Write a brief script explaining VUS</td>
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<td>Wednesday 8th Mar</td>
<td>8:30–9:30 am</td>
<td>Introduction to Neurology Examination and Diagnostics</td>
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<td>Date</td>
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<td>Wednesday March 8th</td>
<td>9:30 – 12 pm</td>
<td>Role Play</td>
<td>Take Home Assignment&lt;br&gt;• Write letter from information obtained in role play.</td>
<td>Template of CA consult letter</td>
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<td>Wednesday March 22nd</td>
<td>8:30 – 11:00 am</td>
<td>Introduction to Reproductive Genetics</td>
<td>In Class Activity: Preparing for and Organizing a Reproductive Genetics Case.&lt;br&gt;Take Home Assignment&lt;br&gt;• Review of records&lt;br&gt;• Draw pedigree&lt;br&gt;• Organize records and present case</td>
<td>RG Reference #1, RG Reference #2, Bibliography of commonly used/recommended texts, List of commonly used terms &amp; abbreviations, Samples of prenatal labs, summary letters and ultrasound reports</td>
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<td>Wednesday March 29th</td>
<td>8:30 – 11:00 am</td>
<td>Carrier Screening in Reproductive Genetics&lt;br&gt;Models: Hemoglobinopathies, Cystic Fibrosis, Ashkenazi Jewish diseases</td>
<td>Take Home Assignment&lt;br&gt;• Review of records&lt;br&gt;• Organize counseling session&lt;br&gt;• Write brief consult note</td>
<td>RG Reference #3, Primer on hemoglobinopathies: includes RG references #3, #4, #5, #6, #7, RG Reference #8 - 11, RG Reference #30</td>
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<td>Wednesday April 5th</td>
<td>8:30 – 11:00 am</td>
<td>Fetal Ultrasound&lt;br&gt;Maternal Serum Screening&lt;br&gt;Non-invasive prenatal testing</td>
<td>Take Home Assignment&lt;br&gt;• Review of records&lt;br&gt;• Organize counseling session&lt;br&gt;• Write brief consult note</td>
<td>Maternal age-related risk tables for aneuploidy, RG References #12 - #19, RG Reference #30</td>
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<td>Wednesday April 12th</td>
<td>8:30 – 11:00 am</td>
<td>Invasive prenatal dx procedures&lt;br&gt;Microarray CGH in prenatal dx&lt;br&gt;Other Misc. Topics in RG</td>
<td>Take Home Assignment&lt;br&gt;• Create a brief fact sheet and reference list for assigned ultrasound anomaly&lt;br&gt;Preparation for Role Play</td>
<td>RG References #20 – 29, RG Reference #33</td>
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Wednesday April 19th
8:30 – 10:30 am
Role Play and Discussion

Take Home Assignment
- Write consult summary letter to referring OB

○ Sample prenatal GC summary letters: traditional & report-style

Tuesday April 25th
1:30 to 4:30 pm
Standardized Patient Session

Additional Information:

Student Disability Services: If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone for deaf/hearing impaired students). Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. Once you have your accommodations in place, I will be glad to meet with you privately during my office hours or at another agreed upon time to discuss your needs.

Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the final exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student’s accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

Religious holidays: Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

Academic Dishonesty -- Plagiarism and Cheating: Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://doso.wayne.edu/codeofconduct.pdf). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

- Cheating: Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.
- Fabrication: Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.
• Plagiarism: To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

• Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

Course Drops and Withdrawals: In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: http://reg.wayne.edu/pdf-policies/students.pdf

Student services:
• The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit www.success.wayne.edu for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).
• The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit http://www.clas.wayne.edu/writing/ to obtain information on tutors, appointments, and the type of help they can provide.

Class recordings: Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student’s personal instructional use. Such recordings are not intended for a wider public audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.