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Module Title	Folder Content	Targeted Learning Objectives
Human Genome Project, Genetics and Genomics Related Research	**Human Genome Project Assignment/Topical Outline** I. Difference between genetics and genomics II. The Human Genome Project and it's impact III. Impact of the media on the public's perceptions about genetics and advances in genomics related research IV. Identification of the implications of media reports about genetics and genomic related research for nursing practice **Human Genome Project Supplemental Resources**	Describe the significance of the Human Genome Project, genetics and genomics related research for healthcare. Discuss the implications of media reports about genetics and genomics related research for nursing practice.
Basic Genetic Concepts and Patterns of Inheritance Review	**Basic Genetic Concepts Assignment/Topical Outline** I. Review of the differences between chromosomes, DNA and genes II. Review of basic genetic concepts and patterns of inheritance III. NCHPEG Core Principles in Genetics IV. Review of pedigree symbols V. Punnett squares VI. Identification of patterns of inheritance using pedigrees **Basic Genetic Concepts Pedigree Exercises** **Basic Genetic Concepts Pedigree Exercise Answers** **Basic Genetic Concepts Quiz** **Basic Genetic Concepts Quiz Answers** **Basic Genetic Concepts Supplemental Resources**	Review basic genetic concepts and patterns of inheritance.
Influences on Gene Expression	**Gene Expression Assignment/Topical Outline** I. Factors that can complicate the interpretation of inheritance patterns II. Identification of these complicating factors and at risk family members using case studies **Gene Expression Cases** **Gene Expression Case Answers** **Gene Expression Quiz** **Gene Expression Quiz Answers** **Gene Expression Helpful Hints** **Gene Expression Supplemental Resources**	Recognize variables that influence interpretation of patterns of inheritance. Identify at risk family members using case studies.
DNA Replication,	**DNA Replication Assignment/Topical Outline** I. Review of DNA, RNA and gene	Simulate the processes of DNA replication, DNA transcription, mRNA

Transcription and mRNA Translation	II. DNA replication, transcription and mRNA translation III. DNA repair IV. Mutations and their results V. Identification of errors in DNA replication, transcription, mRNA translation and DNA repair that contribute to genetic conditions using genetic condition case examples **DNA Replication, DNA Transcription, mRNA Activity** **DNA Replication, DNA Transcription, mRNA Activity Answers** **DNA Replication Genetic Conditions** **DNA Replication Genetic Conditions Answers** **DNA Replication Supplemental Resources**	translation. Describe the different types of mutations.
Genetic Basis of Cancer	**Cancer Genetics Assignment/Topical Outline** I. Proto-oncogenes, oncogenes, suppressor genes and DNA repair genes II. Germline vs. somatic cell mutations III. Predisposition for cancer development IV. Two hit hypothesis V. Review of pedigree symbols VI. Ways in which nurses can use knowledge about cancer genetics in their practice A. Identify families and family members at high risk for cancer B. Assist clients / families during cancer risk assessment / counseling process **Cancer Genetics Questions** **Cancer Genetics Questions Answers** **Cancer Genetics Quiz** **Cancer Genetics Quiz Answers** **Cancer Genetics Scenarios** **Cancer Genetics Scenario Answers** **Cancer Genetics Supplemental Resources**	State the roles of proto-oncogenes, oncogenes, and suppressor genes in cancer development. Discuss ways in which nurses can use knowledge about cancer genetics in their practice.
Introduction to Genetic Variation	**Genetic Variation Assignment/Topical Outline** I. Mutation and polymorphism II. Race, ethnicity and ancestry III. Examination of the variation within the human race using an online: A. Mitochondrial DNA variation research activity to explore the benefits/challenges of human genetic variation research B. Search to identify companies that offer genetic testing for	Explore the benefits and challenges of human genetic variation research. Examine expression of DNA variations within the student population.

	race, ethnicity, and/or ancestry IV. Examination of the variation within the classroom using: A. Hands on Human Genetic Traits BioKit B. Online Interactive Variation Activity **Genetic Variation Traits Activity Form** **Genetic Variation Genetic Testing Companies** **Genetic Variation Supplemental Resources**	
History Taking and Pedigrees	**History Taking Assignment/Topical Outline** I. Review of pedigree symbols and patterns of inheritance II. Family history taking and pedigree construction III. Dysmorphology terms and early identification and referral process/criteria for patients and families IV. Pedigree analysis including risk assessment; identification of conditions that warrant attention, pattern of inheritance and alternative pattern of inheritance **Identification and Referral** **Jones Family History Instructions** **Jones Fictitious Family History** **Jones Pedigree** **Smith Family History Instructions** **Smith Fictitious Family History** **Smith Pedigree** **Pedigrees** **Pedigree Answers** **History Taking Supplemental Resources** **Vocabulary of Dysmorphology**	Practice incorporating family history and pedigrees into nursing assessments: • Construct a 3 - 4 generation pedigree using standardized pedigree symbols, • Assess risk for inherited conditions using a 3 - 4 generation pedigree, and • Recognize family history findings that suggest the possibility of a genetic condition.
Genetic Testing Part 1	**Genetic Testing 1 Assignment/Topical Outline** I. Exploration of the different types of genetic tests II. Predisposition testing vs. presymptomatic testing vs. symptomatic testing III. Predictive value IV. Consideration of sensitivity and specificity of tests V. Case studies to apply content and demonstrate nurses' role in the genetic testing process **Genetic Testing 1 Handout** **Genetic Testing 1 Cases** **Genetic Testing 1 Internet & Case Answers** **Genetic Testing 1 Quiz**	Differentiate between genetic screening and genetic diagnostic testing. Identify the different types of genetic tests. Discuss ways in which nurses can assist people during the genetic testing process.

	Genetic Testing 1 Quiz Answers **Genetic Testing 1 Supplemental Resources**	
Genetic Testing Part 2	**Genetic Testing 2 Assignment/Topical Outline** I. Exploration of the information needs of persons/families regarding genetic testing II. Exploration of issues surrounding genetic testing and research III. Exploration of non-directive and patient counseling IV. Cases that demonstrate aspects of genetic testing that need to be considered by nurses **Genetic Testing 2 Case Studies** **Genetic Testing 2 Case Studies Answers** **Genetic Testing 2 Supplemental Resources**	Explore the types of information needed by persons and families to make informed decisions about genetic testing.
Genetic Therapeutics	**Genetic Therapeutics Assignment/Topical Outline** I. Exploration of various genetic therapeutic strategies II. Pharmacogenomics/Pharmacogenetics III. Discussion of genetic therapeutic strategies, including the following, using case studies: enzyme replacement therapy, gene therapy, genetic vaccines and stem cell transplants **Genetic Therapeutics Case Studies** **Genetic Therapeutics Case Studies Answers** **Genetic Therapeutics Supplemental Resources**	Describe the strengths and weaknesses of genetic therapeutic strategies.
Resources for Patients and Families	**Resources Assignment/Topical Outline** I. Discussion of psychosocial support needed by patients and families affected by a genetic condition II. Identification of genetics resources, including patient education resources, using scenarios **Resources Assignment Summaries** **Resources on the Internet Scenarios** **Resources Supplemental Resources**	Identify resources for healthcare professionals and lay public about genetic conditions, support groups and genetic testing. Discuss the psychosocial impact that the presence of a genetic condition has on the patient and family. Discuss the ways in which nurses can meet the psychosocial and resource needs of patients and families affected by a genetic condition.
Ethical, Legal and Social Implications	**ELSI Assignment/Topical Outline** I. Overview of ELSI issues	Examine issues nurses need to consider when assisting people to access genetic

	II. Role of nursing regarding access to genomic healthcare and informed decision making Code of ethics III. Discussion of ethical issues using case studies A. Genetic testing of children B. Disclosure of genetic information C. Misattributed paternity D. Preimplantation testing IV. Discussion of psychosocial issues such as emotional distress and discrimination using case studies **ELSI Case Studies** **ELSI Case Studies Summaries** **ELSI 12 Supplemental Resources**	tests or services.
Ethnic, Racial and Cultural Considerations for Providing Genetic Services	**Ethnic, Racial, Cultural Assignment/Topical Outline** I. Race II. Culture III. Ethnicity IV. Discussion of nursing implications for providing care to diverse people with or at risk for genetic conditions using case studies **Ethnic, Racial, Cultural Case Studies** **Ethnic, Racial, Cultural Case Studies Summaries** **Ethnic, Racial, Cultural Supplemental Resources**	Explore ethnic, racial, cultural considerations when presenting genetic information and providing genetic services. Identify the nursing implications for providing care to diverse people with or at risk for genetic conditions.
Nursing Roles in Genetic Health Care	**Nursing Roles Assignment/Topical Outline** I. Definition of genetics nursing A. Scope of Genetics Clinical Nursing Practice B. Standards of Genetics Clinical Nursing Practice II. Exploration of the different levels of genetics nursing practice using case examples A. Basic level genetics nursing practice B. Advanced level genetics nursing practice **Nursing Roles Questions** **Nursing Roles Summary** **Nursing Roles Supplemental Resources**	Determine nursing roles for different levels of nurses who care for patients/families with a genetic condition.