The Certificate in Clinical Genetics will train graduate students in the principles of inheritance, the basis of inheritance, how inheritance influences risk in human disease, and the technology and methods involved in testing for genetic disorders. Students who complete the certificate will be able to apply this knowledge to understand genetic conditions and the role of genetic professionals in the clinical setting, as well as calculate risk for genetic disorders. Graduates will be competitive applying for jobs, such as genetic counseling assistants, or in seeking promotions within their fields, such as nursing or technicians employed in genetic diagnostic laboratories. These graduates will also be more competitive in applying for professional training such as genetic counseling master’s programs or clinical diagnostic fellowships.

Program goals
The goal of the graduate certificate program in clinical genetics is to introduce students to human genetics concepts and its methodologies, understand the roles of genetic professionals in the clinic and gain an understanding of genetic conditions and the current genetic testing methodologies.

Student learning outcomes
1. Knowledge of human genetics: Certificate candidates will demonstrate the appropriate knowledge of human genetics including patterns of inheritance, risk analysis, the molecular basis of inheritance and methods to study human genetics.
2. Knowledge of clinical genetics: Certificate candidates will demonstrate the appropriate knowledge of genetic conditions and the varying roles of genetics professionals in clinical and laboratory genetics.
3. Knowledge of genetic diagnostics: Certificate candidates will demonstrate the appropriate knowledge of current methodologies in genetic diagnostics for specific genetic conditions.

VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs
The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (http://www.graduate.vcu.edu/) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

Visit the academic regulations section for additional information on academic regulations for graduate students. (http://bulletin.vcu.edu/academic-regs/)

Graduation requirements
As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the academic regulations section for additional information on graduation requirements. (http://bulletin.vcu.edu/academic-regs/grad/graduation-info/)

Apply online today. (https://www.vcu.edu/admissions/apply/graduate/)

Admission requirements

<table>
<thead>
<tr>
<th>Degree:</th>
<th>Semester(s) of entry:</th>
<th>Deadline dates:</th>
<th>Test requirements:</th>
</tr>
</thead>
</table>
| Certificate  | Fall                  | May 30          | TOEFL or IELTS required for non-native English speakers

The admission requirements outlined below will apply to all students. All applicants to the graduate certificate program are required to meet the admission requirements of the VCU Graduate School (http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements/). Applicants will be required to submit the following materials to the Graduate School admissions office:

- An earned undergraduate degree related to genetics, biology or psychology
- Application form and application fee
- Three letters of recommendation, professional and/or academic
- Official undergraduate transcripts from all schools attended
- A statement of purpose outlining career goals and previous experience

A maximum of three equivalent, graduate-level transfer credit hours at the 500-level or higher may count toward the certificate. The transfer credits are evaluated on a case-by-case basis to determine course equivalency. Credits from a degree already awarded cannot be applied toward the certificate.

International students will submit an official transcript evaluation from a recognized foreign educational credentials evaluation service accredited by the National Association of Credential Evaluation Service or the American Association of Collegiate Registrars and Admissions Officers. International students must also provide proof that they can support themselves financially for the duration of the program.

Non-native English speakers will provide evidence of proficiency in English by one of the following:

- A Test of English as a Foreign Language minimum composite score of 100 for the Internet-based test or 600 for the paper-based score
Clinical Genetics, Certificate in (Graduate certificate)

- An International English Language Testing Systems minimum score of 6.5 on the academic exam
- A passing score on the VCU English Language Program compression test

The curriculum will prepare students to have a solid understanding of inheritance and the basis of inheritance as it applies to human and clinical genetics. Students will also gain an understanding of genetic conditions, modern diagnostic methodologies and their application, as well as the roles of genetic professionals in the clinic. Graduates will be prepared to work in clinical settings and genetics testing laboratories, including academic institutions, research institutions, hospitals and private diagnostic companies.

**Curriculum requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS 543</td>
<td>Graduate Research Methods I</td>
<td>3</td>
</tr>
<tr>
<td>HGEN 501</td>
<td>Introduction to Human Genetics</td>
<td>3</td>
</tr>
<tr>
<td>HGEN 502</td>
<td>Advanced Human Genetics</td>
<td>3</td>
</tr>
<tr>
<td>HGEN 606</td>
<td>Introduction to Clinical Genetics</td>
<td>1</td>
</tr>
<tr>
<td>HGEN/PATH 609</td>
<td>Clinical Genomics</td>
<td>2</td>
</tr>
</tbody>
</table>

**Electives**

Select a minimum of four credits from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALHP 708</td>
<td>Ethics and Health Care</td>
</tr>
<tr>
<td>ANAT 612</td>
<td>Human Embryology</td>
</tr>
<tr>
<td>BIOC 503</td>
<td>Biochemistry, Cell and Molecular Biology</td>
</tr>
<tr>
<td>BIOS 544</td>
<td>Graduate Research Methods II</td>
</tr>
<tr>
<td>CCTR 640</td>
<td>Team Science: Theories and Practice</td>
</tr>
<tr>
<td>EPID 645</td>
<td>Public Health Genomics</td>
</tr>
<tr>
<td>GRAD 615</td>
<td>Biomedical Science Careers Seminar Series</td>
</tr>
<tr>
<td>HADM 611</td>
<td>Health Care Law and Bioethics</td>
</tr>
<tr>
<td>HADM 615</td>
<td>Health Care Politics and Policy</td>
</tr>
<tr>
<td>HADM 646</td>
<td>Health Care Organization and Leadership</td>
</tr>
<tr>
<td>HADM 681</td>
<td>Clinical Concepts and Relationships</td>
</tr>
<tr>
<td>HCPPR 601</td>
<td>Introduction to Health Policy</td>
</tr>
<tr>
<td>HGEN 527</td>
<td>Medical Genetics</td>
</tr>
<tr>
<td>HGEN 528</td>
<td>Medical Genetics</td>
</tr>
<tr>
<td>HGEN 603</td>
<td>Mathematical and Statistical Genetics</td>
</tr>
<tr>
<td>HGEN 605</td>
<td>Experimental Methods in Human Genetics</td>
</tr>
<tr>
<td>HGEN 610</td>
<td>Current Literature in Human Molecular Genetics</td>
</tr>
<tr>
<td>HGEN 611</td>
<td>Data Science I</td>
</tr>
<tr>
<td>HGEN 612</td>
<td>Data Science II</td>
</tr>
<tr>
<td>HGEN 614</td>
<td>Pathogenesis of Human Genetic Disease</td>
</tr>
<tr>
<td>HGEN 620</td>
<td>Principles of Human Behavioral Genetics</td>
</tr>
<tr>
<td>HGEN 631</td>
<td>Advanced Dental Genetics</td>
</tr>
<tr>
<td>IDDS 600</td>
<td>Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities</td>
</tr>
<tr>
<td>NURS 772</td>
<td>Qualitative Research</td>
</tr>
<tr>
<td>PATC 635</td>
<td>Clinical Ethics</td>
</tr>
<tr>
<td>PHIL 602</td>
<td>Biomedical Ethics</td>
</tr>
<tr>
<td>PSYC 603</td>
<td>Developmental Processes</td>
</tr>
<tr>
<td>PSYC 619</td>
<td>Learning and Cognition</td>
</tr>
<tr>
<td>PSYC 620</td>
<td>Design and Analysis of Psychological Research</td>
</tr>
<tr>
<td>PSYC 629</td>
<td>Biological Basis of Behavior</td>
</tr>
<tr>
<td>PSYC 630</td>
<td>Social Psychology</td>
</tr>
<tr>
<td>PSYC 660</td>
<td>Health Psychology</td>
</tr>
<tr>
<td>SBHD 611</td>
<td>Health Literacy</td>
</tr>
</tbody>
</table>

**Total Hours**

16

1 Electives must be approved by the program director; other courses can be substituted with program director approval.

The minimum total of graduate credit hours required for this certificate is 16.

**Contact**

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