

Approval Form

Proposal Title: CONCEPTS IN HUMAN GENETICS

Sponsor(s) GREGORY HECHT Dept.: BIOLOGICAL SCI. Ext. 4833

Check one: Course Specialization Concentration Minor Achievement Certificate
 Certification Program Major Program Minor Change (please name deletion or credit/title/catalog change)

Undergraduate Graduate 4.0 Credit Hours

<p>Step 1 (Department)</p> <p><input checked="" type="checkbox"/> Approved <u>Oct 23 1997</u> Date</p> <p><input type="checkbox"/> Not Approved</p> <p><u>E. J. Moore</u> Dept. CC Chairperson</p> <p><input checked="" type="checkbox"/> Reviewed <u>Oct 23 1997</u> Date</p> <p><u>E. J. Moore</u> Dept. Chairperson</p>	<p>Step 2 (Receipt)</p> <p><input type="checkbox"/> SCC# <u>9798 112</u></p> <p>Proposal Received <u>10-24-97</u> Date</p> <p><u>A. Reeves</u> SCC Chairperson</p>	<p>Step 3 (School CC)</p> <p>Reviewed <u>10/23/97</u></p> <p><input checked="" type="checkbox"/> Approved <input type="checkbox"/> Not Approved</p> <p>Comments:</p> <p><u>[Signature]</u> School Curr Comm Chairperson</p>
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Step 4 (Academic Dean)

Recommend
 Not Recommend
 Conditionally Recommend (see comments)

Reviewed _____ Date _____

Comments: _____

Signature, Dean of School

Step 5 (SCC)

Open Hearing _____ Date _____ Approved by Senate Curriculum Committee _____ Date _____

Returned to sponsor(s) for the following reasons:

Step 6 (Senate)

Presented to Senate 10/24/97 Date Approved Not Approved

Notification to Executive Vice President/Provost 10/25/98 Date [Signature]
Signature of Chairperson

Rowan College of New Jersey
Department of Biological Sciences

0422-410

**New Course Proposal:
Concepts in Human Genetics**

1. DETAILS:

1a. Course Title: Concepts in Human Genetics

1b. Sponsors: Department of Biological Sciences
Gregory Hecht, Assistant Professor

1c. Credit Hours: 4 s.h., including laboratory

1d. Course Level: Undergraduate; 400-level HEGIS number requested. Limited to Seniors.

1e. Curricular Effect:

Minimal. Currently, seniors in the department are permitted to enroll in the graduate course Human Genetics 0422.598. No "additional" sections of the course need be offered -- the graduate and undergraduate course would meet together. The Department offers Human Genetics every other year in the Spring semester.

1f. Prerequisites:

Genetics 0422.335 or permission of instructor; Senior class standing.

1g. Suggested Time and Scale of Implementation:

Effective Spring 1999.

1h. Adequacy of Present Staff, Resources, Library Facilities:

All are adequate at present.

1i. Short-term Evaluation:

All of the Biological Sciences are routinely evaluated by the Departmental Curriculum Committee and considered by the entire Department.

2. RATIONALE:

Currently, we offer the graduate course Human Genetics 0422.598. In any given year, at least 1/2 of the students enrolled in the graduate course are undergraduate Seniors. The Department would like a mechanism whereby graduate students enrolled in the course will be given an additional assignment(s) -- for example, a term paper. We believe that graduate students should be required to do more for a course than undergraduate students. We can do that if 2 "levels" of the course existed, even though the class itself will be mixed.

3. ESSENCE OF THE COURSE:

3a. Objectives:

The objectives of the proposed undergraduate course are the same as for the existing graduate course -- namely, to provide students with an understanding of patterns of transmission of single gene traits

in humans, human biochemical genetics, autosomal and sex-linked chromosomal anomalies, immunogenetics and blood groups, screening for genetic diseases and prenatal diagnosis.

3b. Topical Outline/Content:

Since the graduate and undergraduate class will be taught together, the topical outline for the course will be identical to that of the current graduate course. No changes will be necessary in the current syllabus, with the exception of the criteria for grading of the students (*e.g.*, the additional requirement of a term paper or similar assignment for the graduate students). All students would take the same exams.

• General Remarks:

Important concepts in human medical genetics, human molecular genetics, and human molecular evolution will be described during this course. Biotechnology applied to human genetic studies will also be discussed. By using the primary scientific literature as a major source for assigned readings, students will also gain an historical perspective for the field.

• Objectives:

1. To enable students to develop an understanding of the different genetic laboratory techniques used to understand human genetics.
2. To enable students to develop the skill of reading the primary scientific literature.

• Course Outline:

The topics to be covered are listed below. The instructor will supply the students with a syllabus during the first week of classes. The instructor will assess any technology advances in the subject matter prior to the course and make topic changes as deemed appropriate to maintain the level and currency of instruction. Where possible and practical, assigned readings for the topics listed will include articles from peer-reviewed science journals.

Introduction (review of DNA structure & function, major biotechnology techniques).

Chromosome structure; human cytogenetics; human chromosomal abnormalities.

Cloning human genes:

cloning by homology (*e.g.*, color vision pigment genes)

microdeletion cloning (*e.g.*, muscular dystrophy)

breakpoint mapping (*e.g.*, NF1)

linkage disequilibrium (*e.g.*, cystic fibrosis)

Sex determination in humans

Use of animal models (*e.g.*, genetics of obesity)

Genetics of cancer

Inherited metabolic disorders

Immunogenetics

Human behavioral genetics

Human molecular evolution; genetic history of the human population

Human Genome Project

• Methods of Grading:

1. Hour Exams and Final Exam.

2. Laboratory: will include (but not necessarily limited to) exercises in karyotyping, polymerase chain reaction/human DNA fingerprinting, and human molecular evolution.

3. Class Participation: Students are expected to attend all classes and labs, and to actively participate in discussions.

3c. Evaluation and Grading Procedure of Students:

Students will be graded based on their performance on several hour exams plus a final exam. In addition, they will be graded on their performance in the laboratory. "Lab practicals" may be given. Classroom discussion is heavily encouraged as part of the general learning process.

3d. Course Evaluation:

The Biological Sciences Department, as a whole, routinely reviews the Department's courses to assess the courses' success in meeting the goals and objectives of the College and the Program.

4. Results of Consultation:

Since this is essentially a "split" of a currently existing course, no outside consultation was done. No other Rowan University department offers a course with a similar content.

5. Additional Information:

None.

6. Catalog Description:

See next page.

Catalog Description

0422.4XX 4 s.h.

Concepts in Human Genetics

(Prerequisites: Senior class standing; 0422.335 or permission of instructor)

Patterns of transmission of single gene traits, human biochemical genetics, autosomal and sex-linked chromosomal anomalies, immunogenetics and blood groups, screening for genetic diseases and prenatal diagnosis will be discussed during this course. The reading material for this course will be primarily from the original scientific literature. This course includes lecture and laboratory sessions.