

KINGSBOROUGH COMMUNITY COLLEGE
The City University of New York

CURRICULUM TRANSMITTAL COVER PAGE

Department: Physical Sciences Date: Sep 2020

Title Of Course/Degree/Concentration/Certificate: SCI 9201-9204 Research I-IV

Change(s) Initiated: (Please check)

- | | |
|--|---|
| <input type="checkbox"/> Closing of Degree | <input type="checkbox"/> Change in Degree or Certificate |
| <input type="checkbox"/> Closing of Certificate | <input type="checkbox"/> Change in Degree: Adding Concentration |
| <input type="checkbox"/> New Certificate Proposal | <input type="checkbox"/> Change in Degree: Deleting Concentration |
| <input type="checkbox"/> New Degree Proposal | <input type="checkbox"/> Change in Prerequisite, Corequisite, and/or Pre/Co-requisite |
| <input checked="" type="checkbox"/> New Course | <input type="checkbox"/> Change in Course Designation |
| <input type="checkbox"/> New 82 Course (Pilot Course) | <input type="checkbox"/> Change in Course Description |
| <input type="checkbox"/> Deletion of Course(s) | <input type="checkbox"/> Change in Course Title, Number, Credits and/or Hours |
| | <input type="checkbox"/> Change in Academic Policy |
| | <input type="checkbox"/> Pathways Submission: |
| | <input type="checkbox"/> Life and Physical Science |
| | <input type="checkbox"/> Math and Quantitative Reasoning |
| | <input type="checkbox"/> A. World Cultures and Global Issues |
| | <input type="checkbox"/> B. U.S. Experience in its Diversity |
| | <input type="checkbox"/> C. Creative Expression |
| | <input type="checkbox"/> D. Individual and Society |
| | <input type="checkbox"/> E. Scientific World |
| <input type="checkbox"/> Change in Program Learning Outcomes | |
| <input type="checkbox"/> Other (please describe): _____ | |

PLEASE ATTACH MATERIAL TO ILLUSTRATE AND EXPLAIN ALL CHANGES

DEPARTMENTAL ACTION

Action by Department and/or Departmental Committee, if required:

-- Date Approved: Sep 2020 Signature, Committee Chairperson: John Mikalapas

If submitted Curriculum Action affects another Department, signature of the affected Department(s) is required:

Date Approved: _____ Signature, Department Chairperson: _____

Date Approved: _____ Signature, Department Chairperson: _____

I have reviewed the attached material/proposal

Signature, Department Chairperson: John Mikalapas Sep 2020

Revised/Aug1.2018/AK

Revised/July.2020/AK

Kingsborough Community College

The City University of New York

New Course Proposal Form

1. Department, Course Number, and Title (Speak with Academic Scheduling for assignment of a new course number):

PHYSICAL SCIENCES

SCI 9201, SCI 9202, SCI 9203, SCI 9204

RESEARCH I, RESEARCH II, RESEARCH III, RESEARCH IV

2. Does this course meet a General Education/CUNY Common Core Pathways Category? ***Note: 82XX (Pilot) courses CANNOT be considered for Pathways: **NO****

- Life and Physical Science
- Math and Quantitative Reasoning
- A. World Cultures and Global Issues
- B. U.S. Experience in its Diversity
- C. Creative Expression
- D. Individual and Society
- E. Scientific World

If **YES**, complete and submit with this proposal a CUNY Common Core Pathways Submission Form.

3. Describe how this course transfers (required for A.S. Degree course). If A.A.S. Degree course and does not transfer, justify role of course, e.g. describe other learning objectives met.

Undergraduate research under the supervision of a faculty member is becoming common place and accepted practice at the community college level.

For example, the 2019-2020 College Catalog for Queensborough Community College, City University of New York includes:

CH-911 Independent Study and Research IA

CH-912 Independent Study and Research IB

CH-913 Independent Study and Research IIA

CH-914 Independent Study and Research IIB

At Kingsborough, in the Physical Sciences Department, we offer Research I, II, III, IIII courses in our degree course EPS, CHM, EGR, PHY.

The courses proposed here are for the non-science undergraduate major applying the scientific method to a research project.

Standard practice outside CUNY, and as reflected by CUNY TIPPS (Transfer Information & Program Planning System) internal to CUNY --- credits for research courses transfer as elective credits.

Furthermore, summer NSF (National Science Foundation) (REU-s) Research Experience for Undergraduates have become common place for both science and non-science majors. Research experience reflected on an academic transcript makes a student more competitive for these stipends.

MOST IMPORTANTLY this course is a programmatic part of an ongoing program, CRSP (CUNY Research Scholarly Program) in which, at present, and for the past several years, 20-25 students at Kingsborough receive an annual stipend of \$4000 for 320 hours of undergraduate research under the supervision of faculty volunteers. --- Previously, the CRSP program was only open to students studying in traditional STEM departments (i.e. Physical Sciences, Biology or Math). The program is now open to non science majors, enrolled in a science subject and research projects are being conducted from were range of departments. ---- The SCI 9201-04 courses will serve students from non STEM departments, allowing them to receive credit for their research in the CRSP program.

4. College Catalog description of course:

SCI 9201-9204 RESEARCH I-IV (1, 2 or 3 credit(s) per semester)

Planning and carrying out a undergraduate research project under supervision of a faculty member including literature readings, laboratory work, conferences with faculty member, and presentation of research results. Prerequisite: Department Permission Required

5. Credits and Hours Based on *College Credits Assigned for Instructional Hours* - *Hours are hours per week in a typical 12-week semester (Please check **ONE** appropriate box below based on credits) :

1-credit: <input type="checkbox"/> 1 hour lecture <input checked="" type="checkbox"/> 2 hours lab/field/gym
2-credits: <input type="checkbox"/> 2 hours lecture <input type="checkbox"/> 1 hour lecture, 2 hours lab/field <input checked="" type="checkbox"/> 4 hours lab/field
3-credits: <input type="checkbox"/> 3 hours lecture <input type="checkbox"/> 2 hours lecture, 2 hours lab/field <input type="checkbox"/> 1 hour lecture, 4 hours lab/field <input checked="" type="checkbox"/> 6 hours lab/field
4-credits: <input type="checkbox"/> 4 hours lecture <input type="checkbox"/> 3 hours lecture, 2 hours lab/field <input type="checkbox"/> 2 hours lecture, 4 hours lab/field <input type="checkbox"/> 1 hour lecture, 6 hours lab/field <input type="checkbox"/> 8 hours lab/field
More than 4-credits: <input type="checkbox"/> Number of credits: ____ (explain mix lecture/lab below) ____ Lecture ____ Lab Explanation: _____

For 3 credits --- Students are required to complete 80 hours (average of approximately 6 hours per week for an academic semester) of literature review, progress reports, research work and presentation of results.

6. Number of Equated Credits in Item #5 0 (For Developmental Courses ONLY)
7. Course Prerequisites, Corequisites, and Selected Populations (If NONE, please indicate “NONE” for each):
- A. Prerequisite(s): **Department Permission Required**
 - B. Corequisite(s):
 - C. Pre-/Co-requisite(s):
 - D. Open ONLY to selected Students (specify population):
8. Brief rationale to justify proposed course, include:
- A. Enrollment Summary if previously offered as an 82XX-Pilot Course (include Complete 4-digit 82 course number):
 - B. Projected Enrollment:
1-4 STUDENTS PER SECTION (20-25 FOR ALL 92 SECTIONS)
 - C. Suggested Class Limits: **4 STUDENTS PER SECTION**
 - D. Frequency course is likely to be offered:
 - E. Role of course in Department’s Curriculum and College’s Mission:

Undergraduate research under the supervision of a faculty member is becoming common place and accepted practice at the community college level. Most importantly this course is a programmatic part of an ongoing program, CRSP (CUNY Research Scholarly Program) in which, at present, and for the past 2 years, 20-25 students at Kingsborough receive an annual stipend of \$5000 for 400 hours of undergraduate research under the supervision of faculty volunteers.
9. List course(s), if any, to be withdrawn when course is adopted (Note: this is NOT the same as deleting a course): **NONE**
10. If course is an internship, independent Study, or the like, provide an explanation as to how the student will earn the credits awarded. The credits awarded should be consistent with the student efforts required in a traditional classroom setting.

Students will meet individually with faculty supervisory for not less than one hour a week.

Students are required to complete all mandatory trainings for research and laboratory work.

Students will review current literature

Students will formulate a research question

Students will carry out a series of experiments

Students will draw conclusions from their data

Students will make and oral and written presentations of their research proposal, data and conclusions

Students will meet individually with faculty supervisory for not less than one hour a week.

11. Proposed textbook(s) and/or other required instructional materials(s):

There is no assigned textbook for this course.

Research information will be largely derived from reviews and the primary and secondary scholarly literature provided/directed by the instructor.

There are numerous highly credentialed and recommended guidelines available on line (most related to National Science Foundation Research Experience for Undergraduates) for undergraduate oral and poster presentations.

<http://hsp.berkeley.edu/sites/default/files/ScientificPosters.pdf>

http://mcnair.ucsb.edu/documents/HowtoCreateaResearchPresentation_000.pdf

12. Is the course REQUIRED for a Major, Concentration, or Certificate?

If **YES**, – Submit a separate Curriculum Transmittal Cover Page indicating a “Change in Degree or Certificate” as well as a Proposal that MUST include a rationale for inclusion of the course within the curriculum and the following additional information:

- A. “Current” Degree with all proposed deletions (strikeouts) and additions (bolded) clearly indicated.
- B. “Proposed” Degree, which displays the degree as it will appear in the *College Catalog*

For a copy of the most up-to-date degree/certificate requirements contact Amanda Kalin, ext. 4611, Amanda.Kalin@kbcc.cuny.edu

The Following NYSED Guidelines must be adhered to for ALL Degree Programs:

45 credits of Liberal Arts Course work for an Associate of Arts Degree (A.A.)

30 credits of Liberal Arts Course work for an Associate of Science Degree (A.S.)

20 credits of Liberal Arts Course work for an Applied Associate of Science (A.A.S.)

13. Explain what students will know and be able to do upon completion of course:

Upon successful completion of the course, the student will:

- 1) Gain understanding of the process of research;**
- 2) Learn the techniques required to successfully carry out research;**
- 3) Gain experience in writing in the style accepted in scholarly literature;**
- 4) Produce research results; and**
- 5) Gain experience in presenting research results to a scholarly audience.**

14. Methods of Teaching – e.g. lectures, laboratories, and other assignments for students, including any of the following: demonstrations, group work, website or email interactions and/or assignments, practice in application skills, etc.:

This course centers around individual research projects and will emphasize all aspects of applied research from initial project design, methods, data analysis, graphics, and final presentation.

Student’s written and graphical work will go through drafts and receive feedback from peers, and mentor. Students will meet individually with faculty supervisory for not less than one hour a week.

15. Assignments to students:

Students are required to work 80 hours per semester (approximately 6-7 hours per week)

Students are required to complete all mandatory trainings for research and laboratory work.

Students will review current literature

Students will formulate a research question

Students will carry out a series of experiments

Students will draw conclusions from their data

Students will make and oral and written presentations of their data and conclusions

16. Describe method of evaluating learning specified in #14 – include percentage breakdown for grading. If a Developmental Course, include how the next level course is determined as well as Next Level Placement.

Since the objective of this course is to carry out research, traditional exams are not an appropriate method of assessing learning. The assigned grade will reflect the priorities and expectations of the supervising faculty member. Student will work on their chosen research projects for a minimum of 80 hours (approximately 6-7 hours per week.) The assessment is based on the following requirements:

contribution to the design of the research project (update for ongoing projects);

ability in laboratory techniques required to successfully carry out research project (update for ongoing projects); and

presentation of research to a scientific audience(update for ongoing projects).

In specific:

Student demonstrates an understanding (updated for ongoing projects) of underlying literature associated with research project (20%)

Student's level of contribution (updated for ongoing projects) to the design of the research project (20%)

Student keeps accurate records (updated for ongoing projects) associated with research project (20%)

Student's commitment and dedication (continued for ongoing projects) if time and effort to the research project (20%)

Student's oral and written presentation (updated for ongoing projects) of research project (20%)

17. Topical Course Outline for the 12-week semester. This should be specific regarding topics covered, learning activities and assignments:

Week 1-2: Students will submit a description of the proposed (update for ongoing projects) research project to the instructor.

Week 2-3: Students will submit a description of the proposed (update for ongoing projects) experimental work to the instructor.

Week 3-11: Students perform (update for ongoing projects) research in consultation with their faculty supervisors. Students will meet individually with faculty supervisory for not less than one hour a week.

Week 12: The student submits a rough draft (update for ongoing projects) oral and written presentation of research project

Finals Week: The student gives oral and written presentation of research project

18. Selected Bibliography and Source materials:

Characteristics of Excellence in Undergraduate Research
http://www.cur.org/assets/1/23/COEUR_final.pdf

RESEARCH DESIGN, WRITING, AND PRESENTATION METHODS
https://www.uaf.edu/geology/faculty/GEOG483_TentativeSyllabus.pdf