ROXBURY COMMUNITY COLLEGE
CURRICULUM COMMITTEE

1. Certificate Name: Life Sciences Certificate

2. Purpose and Objective: The Life Sciences certificate will be a part of a stackable sequence developed for the Department of Labor (DOL) Grant. This program is designed to re-train displaced workers. However, this certificate is open to any eligible RCC students. The students will enter the program and will have a choice of at least three tracks after completion of this certificate. The first option is to pursue Biological Sciences with a concentration in Lab Animal Care. Once the students in the stackable sequence outlined in the DOL grant complete the non-credit Veterinarian Technician certificate, they can re-enter the workforce while continuing their education—that they choose to do so—and complete the Life Sciences certificate followed by the (1) Associates of Arts in Biological Sciences: Lab Animal Care. The second track is (2) Biological Science (AA), where students may prepare for careers in medical and science laboratories as well as transfer to science programs (BA or BS). The third track that students can follow will lead them to completion of (3) certificate in Biotechnology/Biomanufacturing where they can re-enter the workforce. After which they can complete the Associates of Science in Biotechnology. Other tracks include for students completing this certificate is to pursue the (4) Ecology and Environment Associate of Arts degree; or (5) Health Careers (AA).

Upon completion of the Life Sciences Certificate, the student will be able to do the following:
1. Re-enter the workforce as a laboratory assistant.
2. Complete one of the following certificate or degree programs:
   a. Associate of Arts Degree in Biological Sciences: Lab Animal Care
   b. Associate of Arts Degree in Biological Science
   c. Certificate in Biotechnology/Biomanufacturing and Associate of Science Degree in Biotechnology/Biomanufacturing
   d. Associate of Arts Degree in Environmental and Ecology
   e. Associate of Arts Health Careers

The last component of the Life Sciences Certificate is the Science Internship (SCI299). This course is purposefully broad to encompass all types of science internships. Students are placed into Internship sites after interviews with faculty and support staff. Each student will be assigned to a supervising Science Faculty member who will track their progress throughout the internship. The Science Department supports student internships because they increase student retention and provide the student with experiential learning. In addition, the Science Department’s 12-member Advisory board have expressed their support for Science Internships.

Certificate Description: This certificate is designed as an introductory life science curriculum for students who are interested in Biological Sciences, Lab Animal Care, or other Life Science principles such as Biotechnology/Biomanufacturing and Environmental Science. It includes hands-on experience in the laboratory as well as a basic foundation in the life sciences. A core component is the Internship which is taken in the last semester. The Certificate will also be an avenue for recruiting for in the Health Sciences Services as well as in Ancillary care. For
example, students will complete internships in cytology labs, histology labs, clinical lab settings, environmental labs, manufacturing labs, etc.

3. **Certificate Outcomes:**
   a. Use lab equipment properly and follow lab safety procedures.
   b. Exhibit appropriate professional behavior (i.e. teamwork, time management, effective communication and presentation skills, and integrity.)
   c. Demonstrate knowledge of key Scientific concepts.
   d. Perform unit conversions per lab protocols.

3A. **Technical Outcomes:**
   a. Calculate concentrations, dilutions and percentages.
   b. Graph data using appropriate tools and technology.
   c. Demonstrated basic knowledge of lab safety, microscope use, making solutions, and performing dissections.
   d. Identify appropriate cellular and anatomical structures of organisms relevant to evolution.
   e. Apply concepts to better understand the biological world and the problems that affect our society and the life of the individual student.

4. **Need:** This certificate will satisfy the stackable certificate required for the Department of Labor Grant. It will increase the number of qualified graduates in order to meet the industry demands for Life Science technicians.

5. **Transferability:** The Life Sciences Certificate credits will directly transfer into RCC’s:
   a. Associate of Arts Degree in Biological Sciences: Lab Animal Care
   b. Associate of Arts Degree in Biological Science
   c. Certificate in Biotechnology/Biomanufacturing and Associate of Science Degree in Biotechnology/Biomanufacturing
   d. Associate of Arts Degree in Environmental and Ecology
   e. Associate of Arts in Health Careers

6. **Admission and Retention Criteria:** See College admission requirements.

7. **Curriculum Outline:**

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<th>First Semester</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ACS102</td>
<td>The College Experience</td>
<td>None</td>
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<tr>
<td>MAT103</td>
<td>Pre-Calculus</td>
<td>Intermediate Algebra (MAT099) or placement</td>
<td>3</td>
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<tr>
<td>SCI103</td>
<td>Biology I</td>
<td>General Science (SCI 099) or placement;</td>
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<td></td>
<td></td>
<td>Introductory Algebra (MAT088); English Comp I</td>
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<tr>
<td>SCI123</td>
<td>Principles of Chemistry I</td>
<td>Pre-Calculus (MAT 103) Concurrent; English Comp I</td>
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<tr>
<td></td>
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<td>Semester total</td>
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</table>
Second Semester | Title | Prerequisites | Credits |
--- | --- | --- | --- |
ENG101 | English Composition I | English Composition I Eligible | 3 |
SCI104 | Biology II | Biology I (SCI103) | 4 |
SCI124 | Principles of Chemistry II | Principles of Chemistry I (SCI123) | 4 |
SCI299 | Science Internship | Permission of Instructor | 3 |

Semester total: 14
Total Certificate Credits: 28

8. **Program Diversity:** Minorities are historically under-represented in Science. This program will serve to lessen this disparity by giving students another certificate option.

9. **Faculty Needed (identify existing faculty who are qualified):** The College has highly qualified full and part time faculty to teach all of the courses included in this Certificate. Additional adjunct Faculty may be needed for all courses in the sequence if they will be offered in an accelerated format during intercessions (if accelerated courses are required for DOL). The Science Department currently has many highly qualified adjunct Faculty. Faculty Supervisor(s) for the Internship component will also be required.

10. **Administration and Operation:** This Certificate will be administered by the Science, Technology, Engineering, and Math (STEM) Division.

11. **Resources Needed:** This certificate will require support for the lab courses (*i.e.* Biology I, Biology II, Principles of Chemistry I, and Principles of Chemistry II). Specifically, equipment, reagents, supplies and support staff will be required. Support staff includes lab technical staff as well as Internship staff.

**Please Note:**

Certificates requiring more than 29 credits must be approved by Dr. Mercomes before coming to the Curriculum Committee.