## Form E-1-A for Boston College Core Curriculum

## Department/Program: Chemistry 2018

1) Have formal learning outcomes for the department's Core courses been developed?

The Core Requirement Rationale can be found on the natural science core curriculum website via the following link: <u>https://www.bc.edu/bc-web/schools/mcas/undergraduate/core-curriculum/core-</u> requirements.html#2\_courses\_in\_natural\_science

2) Where are these learning outcomes published? Be specific. expected learning outcomes for its Core courses accessible: on the web, in the catalog, or in your department handouts?)

The learning outcomes can be found on the chemistry department website from a link to Core Courses in Chemistry on the Undergraduate Studies page:

https://www.bc.edu/bc-web/schools/mcas/departments/chemistry/academics/undergraduate/corecourses.html

3) Other than GPA, what data/evidence is used to determine whether students have achieved the stated outcomes for the Core requirement? (What evidence and analytical approaches do you use to assess which of the student learning outcomes have been achieved more or less well?)

For Intersection of Science and Painting (CHEM 1102), a final term paper of 2000 words is required in which each student discusses a color from a scientific perspective, describing the chemistry of pigments that exhibit that color, the experimental spectroscopic methods of analysis used to study the pigments, and examples of published studies where those methods have been used to study art objects. In addition, an anonymous learning outcome survey is submitted by each student at the end of the final exam that asks four questions, requiring a response of Strongly Agree (4), Agree (3), Disagree (2), or Strongly Disagree (1). The 2018 summary scores of these four questions are listed below:

1. This course expanded my understanding of the underlying scientific principles, body of scientific

- 3. In this course, I came to recognize more fully the role that scientific discovery has played and increasingly will play in the fields of art appreciation, art history, art conservation and art authentication. [Summary score: 3.45 out of 4]
- 4. This course has taught me to look at things in the natural world with a new appreciation for the scientific method that asks: What is the science behind this phenomenon? [Summary score: 3.32 out of 4]

For the relatively new core course entitled *Living in the Material World* (CHEM1701), pre- and post-tests were administered to the students that contained chemical equations. The tests asked students to balance the equations and identify which ones represent redox reactions.