Senate Document Number    6017S
Date of Senate Approval      05/04/17
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Statement of Faculty Senate Action:

**APC Document 53 (CSCI):**      **Add CSCI 183 as a replacement to CSCI 181;**
     **Delete CSCI 181, reinstating CSCI 201 into the curriculum;**
     **Change titles and course descriptions of CSCI 182, 185, 202;**

**Effective Date:  Fall 2017**

1. **Add:**    On page 116, new course, **CSCI 183:**

   **183**    **Introduction to Programming -- Numerical Applications (3)**
   Problem solving, algorithm development, and data and procedural abstraction with an emphasis on developing scientific applications. Includes a formal laboratory section using program development tools.  Students may receive credit for only one course from CSCI 182, 183 and 185. No credit given to students who have credit for CSCI 181. Fall and Spring.

2. **Delete:** On page 116, the entry for **CSCI 181:**

   **181**    **Introductory Programming for Numeric Applications (3)**
   Problem solving, algorithm development, and data and procedural abstraction with an emphasis on developing scientific applications. Taught using Java and other appropriate technologies. Includes a formal laboratory section using program development tools. Students may not receive credit for both CSCI 181 and 182. Fall and Spring.

   **Add:**    On page 116, reinstate **CSCI 201:**

   **201**    **Introduction to Object-Oriented Programming (3)**
   An introduction to problem solving, algorithm design, implementation, and testing using object-oriented programming principles. Emphasis is placed on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger.  Pre- or corequisite:  CSCI 182, 183 or 185. Fall and Spring.

3. **Delete:** On page 116, the entry for **CSCI 182:**

   **182**    **Introductory Programming for Media Applications (3)**
   Problem solving, algorithm development, and data and procedural abstraction with an emphasis on developing applications that interface with the senses. Taught using Java and other appropriate technologies. Includes a formal laboratory section using program development tools. Students may not receive credit for both CSCI 181 and 182. Fall and Spring.

**Add:** On page 116, in place of deleted entry:

> **182   Introduction to Programming -- Media Applications (3)**
> Problem solving, algorithm development, and data and procedural abstraction with an emphasis on developing applications that interface with the senses. Includes a formal laboratory section using program development tools.  Students may receive credit for only one course from CSCI 182, 183 and 185. Fall and Spring.

**4. Delete:** On page 116, the entry for **CSCI 185:**

> **185   Internet Client-Side Technology (3)**
> The technology of web documents. Topics include style sheets, dynamic content, database interface, scripting languages, and event handling. Prerequisite: CSCI 107 or NM 231. See department chair.

**Add:** On page 116, in place of deleted entry:

> **185   Introduction to Programming -- Web Development (3)**
> Introduction to web page design and development. Topics include style sheets, dynamic content, scripting languages, and event handling.  Students may receive credit for only one course from CSCI 182, 183 and 185. Fall and Spring.

**5. Delete:** On page 116, the entry for **CSCI 202:**

> **202   Introduction to Data Structures (3)**
> Data structures (lists, stacks, queues, trees); searching and sorting algorithms; use of a modern, object-oriented programming language (ACM CS2). Includes a formal laboratory section using program development tools. Prerequisite: CSCI 182 or 183. Fall and Spring.

**Add:** On page 116, in place of deleted entry:

> **202   Introduction to Data Structures (3)**
> Data structures (lists, stacks, queues, binary trees, hash tables); searching and sorting algorithms; use of a modern, object-oriented programming language. Successful completion of this course with a grade of C or higher is required to progress through the Computer Science major or minor. Prerequisite: CSCI 201. Fall and Spring.

**Impact:** The department plans to offer four 18X sections each semester and two sections of CSCI 201. This offering plan matches our current six course offerings of CSCI 181 and 182.  To assist our students in four-year graduation plans, the domain intensive programming courses (CSCI 182, 183, 185) are considered pre- or corequisites to CSCI 201: Introduction to Object Oriented Programming. Students taking CSCI 182, CSCI 183, and CSCI 185 as fulfillment of requirements in Mathematics, New Media, and Music Technology will discover the SLO's are unchanged and may more readily discover the intellectual connections to their respective disciplines.

In Fall 2011, CSCI 201 was removed from the curriculum (SD2111S) and renumbered as 181; therefore, CSCI 201 will be waived for those students declaring under the new curriculum who have credit for CSCI 181 completed prior to Fall 2017.  These students will be required to complete an additional 3 hours in CSCI.

**Rationale:** The changes in this document reflect the following:

1. **A separation of object-oriented concepts from courses that provide introductory programming experiences that allow students to create applications that are relevant and engaging.** The current introductory programming courses, CSCI 181 and CSCI 182, offer engaging activities in numerical applications and media applications, respectively. Both courses currently fulfill the prerequisite requirement to CSCI 202. However, CSCI 202 students perceive that CSCI 181, which has JAVA as a programming language, to be better preparation than CSCI 182.

   To address this issue, our new curriculum reinstates CSCI 201 as a separate object-oriented programming course that will be the prerequisite for CSCI 202. We are also creating a new course, CSCI 183, which is essentially the old 181 without the object-oriented concepts that are part of CSCI 201. CSCI 201 will now be the prerequisite for CSCI 202.

2. **Intentional, well designed opportunities that allow students the ability to design and implement applications within a certain domain (mobile applications, robot activities, web games, music composition, etc.)** CSCI 182, 183 and 185 are designed to introduce students to the discipline of computer science. The interdisciplinary focus of these domain-specific courses should also provide students of other majors an opportunity to learn how to write programs appropriate to their fields of study. The department continues to support the LAC curriculum by offering these Scientific Perspectives courses.

3. **An attempt to aid in early student success in computer science by requiring a grade of C or higher in CSCI 202.** As seen in Figure 1, students earning lower than a C in CSCI 202 have difficulty completing a CSCI major with the required 2.0 average. We hope that requiring a C or higher in CSCI 202 in conjunction with strong academic advising will aid students in determining the major best suited for their academic goals.



Figure 1: CSCI 202 Grade vs CSCI GPA (170 students Fall 2011 to Spring 2016)