Memorandum of Understanding
Between the Pratt School of Engineering and the Department of Electrical and Computer Engineering Regarding the Offering of Core Courses in the University Program in Materials Science and Engineering

September 1, 2017

Because the university and its faculty support multidisciplinary collaboration and education and because it is essential to offer regularly the core courses proposed for the University Program in Materials Science and Engineering, the Pratt School of Engineering and the Department of Electrical and Computer Engineering have agreed to a long-term plan to teach the relevant courses according to the program curriculum.

Core Courses Offered by the ECE Department – The ECE department will offer two core courses: ECE 511 – Foundations of Nanoscale Science and Technology (spring semester) and ECE 521 – Quantum Mechanics (fall semester). These courses will be offered during the stated semester each year, beginning in the Fall 2018 semester. These courses are already taught regularly in the stated semester and do not represent losses to existing requirements within the department. ECE 511 and ECE 521 can accommodate up to 20 additional students.

Instructors and Cost of Instruction – The ECE department has at least four tenure-track faculty members that can teach at least one of the two core courses, while simultaneously fulfilling their teaching duties for the department. In addition, ECE 511 is cross-listed with the existing Nanoscience Certificate program, and at least one faculty member from the Chemistry department teaches the course, which is already offered regularly each year. The cost of instruction for the two core courses is covered within the existing faculty complement and no additional resources are necessary.

Course Scheduling – The ECE department will work with the DGS of the University Program in Materials Science and Engineering to ensure that the core courses do not have scheduling conflicts in a given semester.

The undersigned agree to the terms outlined in this document.

Ravi Bellamkonda
Vinik Dean, Pratt School of Engineering

09.05.2017
Date

Krishnendu Chakrabarty
Chair, Department of Electrical and Computer Engineering

09/01/2017
Date

Adrienne Stiff-Roberts
Director of Graduate Studies, University Program in Materials Science and Engineering

09/01/17
Date

Memorandum of Understanding
Between the Pratt School of Engineering and the Department of Mechanical Engineering and Materials Science
Regarding the Offering of Core Courses in the University Program in Materials Science and Engineering

September 1, 2017

Because the university and its faculty support multidisciplinary collaboration and education and because it is essential to offer regularly the core courses proposed for the University Program in Materials Science and Engineering, the Pratt School of Engineering and the Department of Mechanical Engineering and Materials Science have agreed to a long-term plan to teach the relevant courses according to the program curriculum.

Core Courses Offered by the MEMS Department – The MEMS department will offer four core courses: ME 555 – Computational Materials Science (spring semester), Fundamentals of Soft Matter (new course, spring semester), Materials Synthesis and Processing (new course, fall semester), and Materials Science and Engineering Seminar (new course, fall and spring semesters). These courses will be offered during the stated semester each year, beginning in the Fall 2018 semester. The new courses to be offered fit within the framework of course requirements for MEMS degrees, and therefore, do not represent losses to existing requirements within the department. ME 555 is currently offered every spring and can accommodate up to 20 additional students.

Instructors and Cost of Instruction – The MEMS department has over 12 tenure-track faculty members that can teach at least one of the four core courses, while simultaneously fulfilling their teaching duties for the department. In addition, to provide redundancy, the MEMS department will cross-list the core courses with other departments across campus with faculty that can teach the courses. The cost of instruction for the four core courses is covered within the existing faculty complement and no additional resources are necessary.

Course Scheduling – The MEMS department will work with the DGS of the University Program in Materials Science and Engineering to ensure that the core courses do not have scheduling conflicts in a given semester.

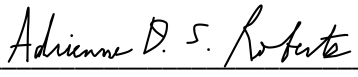
The undersigned agree to the terms outlined in this document.

09.05.2017

Ravi Bellamkonda — Date
Vinik Dean, Pratt School of Engineering

8/17/17

Ken Gall — Date
Chair, Department of Mechanical Engineering and Materials Science



08/31/17

Adrienne Stiff-Roberts — Date
Director of Graduate Studies, University Program in Materials Science and Engineering

September 1, 2017

DUKE UNIVERSITY SMiF Shared Materials Instrumentation Facility

Memorandum of Understanding
Between the Pratt School of Engineering and the Shared Materials Instrumentation Facility Regarding the Offering of Core Courses in the University Program in Materials Science and Engineering

SMIF is pleased to support the proposed University Program in Materials Science and Engineering by offering an additional section of the ECE 721 - Nanotechnology Materials Lab/ME 711 - Advanced Materials Lab to the students that participate in this program. This Memorandum of Understanding is intended to set forth the terms of the agreement between the Shared Materials Instrumentation Facility (SMIF) and the University Program in Materials Science and Engineering.

SMIF and the University Program in Materials Science and Engineering agree as follows:

1. An additional section of the ECE 721 - Nanotechnology Materials Lab/ME 711 - Advanced Materials Lab Course will be offered each spring semester for 5 years, beginning in Spring 2019. SMIF staff will be the instructors for the class. After 5 years this MOU can be renewed by agreement between SMIF and the University Program in Materials Science and Engineering.
2. The class size will be limited to 14 students per semester.
3. The students that are enrolled in ECE721/ME711 will be required to develop, complete, and present a project that utilizes one or more instruments in SMIF. Their project will be chosen and developed with the input and guidance from their faculty advisor.
4. The cost of instruction for the SMIF staff member(s) and for user fees for the SMIF facilities will not exceed $16,000 per semester. This cost will be paid to SMIF by the University Program in Materials Science and Engineering.
5. SMIF will work with the DGS of the University Program in Materials Science and Engineering to ensure that core courses do not have scheduling conflicts in a given semester.

The undersigned agree to the terms outlined in this document.

Ravi Bellamkonda — 09.05.2017
Vinik Dean, Pratt School of Engineering

Nan Jokerst — 8/31/17
Executive Director, Shared Materials Instrumentation Facility

Mark Walters — 8/31/17
Director, Shared Materials Instrumentation Facility

Adrienne Stiff-Roberts — 08/31/17
Director of Graduate Studies, University Program in Materials Science and Engineering

Memorandum of Understanding
Between the Trinity College of Arts & Sciences and the Department of Chemistry
Regarding the Offering of Core Courses in the University Program in Materials Science and Engineering

September 1, 2017

Because the university and its faculty support multidisciplinary collaboration and education and because it is essential to offer regularly the core courses proposed for the University Program in Materials Science and Engineering, the Trinity College of Arts & Sciences and the Department of Chemistry have agreed to a long-term plan to teach the relevant courses according to the program curriculum.

Core Courses Offered by the Chemistry Department – The Department of Chemistry offers two graduate courses that will be part of the core fall semester offerings in the program: CHEM 544 – Statistical Mechanics and CHEM 548 – Fundamentals of Solid State Materials. These courses are already taught regularly as part of the chemistry graduate curriculum and do not represent losses to existing requirements within the department. CHEM 544 and CHEM 548 can accommodate up to 20 additional students.

Instructors and Cost of Instruction – The Chemistry department will make a good faith effort to offer and staff both courses each fall semester. Chemistry currently has four tenure-track faculty members who can teach at least one of the two core courses, while simultaneously fulfilling their other teaching duties for the department. In the past, however, faculty leaves or other staffing constraints have occasionally required Chemistry to offer one of the courses in the spring semester rather than fall, or not to offer one of the courses during a given academic year (especially CHEM 544). Arts & Sciences will not fund replacement teaching to guarantee that Chemistry teach both courses every fall. To provide coverage for such circumstances, the Chemistry department will cross-list these two core courses with other departments across campus whose faculty can teach the courses in the event that Chemistry cannot. Thus, the cost of instruction for the two core courses should normally be covered within the existing faculty complement and no additional resources should be necessary. In the event that neither Chemistry nor these other faculty can cover one of the courses in a given fall, the University Program in Materials Science and Engineering will fund the cost, at a minimum of $15,000 (as of 8/17, the competitive rate for one chemistry course) or the current competitive rate per course, to hire a qualified chemistry instructor.

Course Scheduling – The DGS of the University Program in Materials Science and Engineering is responsible for working with the Chemistry DGS to try to avoid scheduling conflicts between the core courses in a given semester.

The undersigned agree to the terms outlined in this document.

Katherine J. Franz _____ 9/6/2017
Katherine Franz — Date
Chair, Department of Chemistry

Adrienne D. S. Roberts _____ 09/06/2017
Adrienne Stiff-Roberts — Date
Director of Graduate Studies, University Program in Materials Science and Engineering

V Ashby _____ 09/10/2017
Valerie Ashby — Date
Dean, Trinity College of Arts & Sciences