**COLLIN COLLEGE**

**COURSE SYLLABUS**

Course Information

**Course Number**: SMFT 1375

**Course Title:** Materials Technology, Measurement Technology and Characterization Methods Used In Semiconductor Solar Cell Manufacturing

**Course Description:** The course will include an in-depth coverage of materials measurement techniques, statistical process control/capability analysis, six sigma process characterization, and FEMA from the perspective of Photovoltaic Solar Cell materials characterization, electrical characterization and optical characterization technology and techniques. . The course is taught from an engineering perspective using an appropriate level of mathematics for the engineering models presented. Lab required.

**Course Credit Hours:** 3

Lecture Hours: 2

Lab Hours: 3

**Prerequisites:** SMFT 1371 and SMFT 1373 or consent of Associate Dean.

**Student Learning Outcomes:** The student will develop an understanding of and apply the appropriate theoretical models to:

1. The measurement systems and techniques. (SCANS: F1-F5, F9, F11) (SCANS: C1-C3, C11-C19)

2. Process control measurements. (SCANS: F1-F5, F9, F11) (SCANS: C1-C3, C11-C19)

3. Materials characterization measurements. (SCANS: F1-F5, F9, F11) (SCANS: C1-C3, C11-C19)

4. Device characterization measurements. (SCANS: F1-F5, F9, F11) (SCANS: C1-C3, C11-C19)

5. The repair and troubleshooting required by a given measurement technique. (SCANS: F1-F5, F9, F11)

(SCANS: C1-C3, C11-C19)

6. Reliability and Failure Analysis measurement techniques. (SCANS: F1-F5, F9, F11) (SCANS: C1-C3, C11-C19)

**Secretary’s Commission on the Acquisition of Necessary Skills (SCANS) -** SCANS skills are a group of foundational skills and workplace competencies that the Secretary’s Commission on the Acquisition of Necessary Skills established as vitally important for workplace success in the 21st century. In Collin’s workforce programs, the SCANS skills are developed and reinforced throughout the curriculum to provide students with an opportunity to hone these skills/competencies in the context of their education. Over the course of an entire degree program, the successful student is expected to demonstrate all of the SCANS skills and competencies as part of their education. The SCANS Foundation Skills and Workplace Competencies are described at: <http://www.collin.edu/academics/programs/Workforce_SCANS_Skills_Syllabi_Code_Key.pdf>

**Withdrawal Policy:** See the current *Collin Registration Guide* for last day to withdraw.

**Collin College Academic Policies:** See the current *Collin Student Handbook.*

**Americans with Disabilities Act Statement:** Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student’s responsibility to contact the ACCESS office, SCC-D140 or 972.881.5898 (V/TTD: 972.881.5950) to arrange for appropriate accommodations. See the current *Collin Student Handbook* for additional information.

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