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**Fall 2024 Syllabus**

**EGRMGMT 575: Software Quality Management** Tuesday, Thursday 1:25 pm - 2:40 pm**,** Schiciano B 1466 (two sessions per week)

**Instructor**

Prof. Luis E. Morales

Title: Executive in Residence

Affiliation: Pratt School of Engineering

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**Background:**

* Executive Director of MEM Program (July 2021 through July 2024)
* 7 years as faculty at Duke’s Master of Engineering Management (MEM) program. Designed and teach three courses:
* Software Quality Management, EGRMGMT 575
* Using Real Time Data to Improve Customer Experience, EGRMGMT 579
* Pyhton for Data Science Bootcamp, AIPI 503
* Teaching Management in High Tech Industries - MENG 540
* Co-teaching MEM seminar
* Visiting Faculty at Duke Kunshan University (Spring 2020). Taught two sections of STATS-102 ‘Introduction to Data Science”
* Prior to Duke served 28 years in various engineering leadership roles in technology industry:
* 13 years at Cisco Systems in North Carolina
* 15 years at AT&T Labs in New Jersey
* In 2018, started consulting practice (Calu Consulting LLC) helping clients use data to improve customer experience and product quality
* Co-author of two books in the area of software quality management, "Achieving Customer Experience Excellence" ASQ Quality Press June 2016, “Quality Experience Telemetry” ASQ Quality Press March 2018
* Inventor with six patents: US Patents: 5761203, 5987526, 6044092, 7444417, 792576 and 7953855.
* Winner of Cisco’s highest technical recognition, Cisco Pioneer Award 2011, “Interactive Service Request Analyzer”  (ISRV)
1. **Course Description:**

This course is intended to prepare students for roles such as Product Managers, Customer Experience Managers, Software Engineer and Consulting Engineer. The theme of the course is answering the following question:

what does it take to build products that meet customer quality expectations from day 1?

To answer that question, I take students through a journey of the product lifecyle and along the way consider the perspective of five different personas that play a key role in the delivered quality. These are: customer, software engineer, release engineer/quality manager, customer support engineer, and general manager.

For each of these individuals, we talk about what they do and more importantly what aspects of their job are critical to quality. Additionally, we will review best practices (e.g. requirement priotization), tools (e.g. Phase Containment) and identify key control points (e.g. Release readiness) in the development process. We discuss the role of metrics in quality and customer experience management. We will discuss customer listening and approaches to capture the voice of customer. We will give students the opportunity to manipulate real data (using Excel), define & visualize metrics and implement sensing capabilities based on Statistical Process Control. Finally, the class will provide exposure to current industry practitioners who can speak to their own experience managing quality and customer experience management.

Topics include:

* Software lifecycle and key personas (customer, software engineer, release engineer, quality manager, customer support engineer, general manager)
* Definition of customer outcomes & expectations, customer experience and customer satisfaction
* Software engineering roles, including product management, development and testing
* Software quality best practices and tools
* Customer Listening - Assessing customer expectations and measuring customer experience
* Turning customer sentiment and experience data into metrics, signals and insights. Then use those to drive continuous product improvements.
* Incorporating customer expectations into product design
* Customer support case management, crisis management, external and internal escalations
* General Manager role and mindset

20% of the class grade involves a Team Project designed to be a summative experience that helps students apply their knowledge in a realistic scenario working with a team of colleagues. Each team will compete for a consulting contract centered around the development of a quality plan based on unique set of market, customer sentiment and customer experience data. The goal of the plan is to address top customer pain points and improve customer sentiment. The plan should outline:

1. customer expectations
2. identification of key product requirements
3. create metrics and derive insights from customer experience and sentiment data provided
4. recommended changes to internal quality assurance steps
5. recommended changes to software release strategy and readiness criteria
6. customer support and escalation planning and management
7. customer listening strategy (including Voice of Customer) and key customer experience success metrics
8. **Course Objective**

This course is intended to prepare students for roles such as Product Managers, Customer Experience Managers, Software Engineer and Consulting Engineer.

1. **Text**

"Achieving Customer Experience Excellence Through a Quality Management System." ISBN: 978-0-87389-935-2. ASQ Quality Press June 2016.

**Reference Book**

Linda Westfall, “The Certified Software Quality Engineer Handbook, Second Edition”. ISBN:9780873899390. Published by ASQ Quality Press, 2016. **Book available on Reserve at Duke’s Perkins Library**

1. **Course Grading**
* 25% Homework
* 10% Flash Quiz
* 15% Midterm Exam
* 10% Attendance and Participation
* 5% Forums Participation
* 20% Team Project
* 15% Final Exam
* **Class Topics (subject to change): (Guest Speakers to be confirmed for Fall 2024)**
* **Week 1** (Aug 27, 29)– Class introduction, key personas in software product lifecycle, SDLC, PLC
* **Week 2** (Sep 3,5) – Customer Persona: Customer Experience Lifecycle, Customer Listening
* **Week 3** (Sep 10, 12) – Customer Persona: (cont.) Customer Listening framework, Customer Metrics
* **Week 4** (Sep 17,19 ) – Software Engineer Persona => requirements engineering (development and management), “A day in the life”, Guest Speaker – Vijay Pamula, Director Customer Analytics, Workday, Inc.
* **Week 5** (Sep 24, 26) – Software Engineer Persona => software design and development, “A day in the life”, Guest Speaker – Curtis Mitchell, VP of Software Engineering at Newsela
* **Week 6** (Oct 1, 3 ) – Software Engineer Persona => validation and verification, test planning and design, “A day in the life”, Guest Speaker – Sri Hosakote, former Head of Engineering at Infinera, SVP/GM at Cisco
* **Week 7** (Oct 8) - Midterm
	+ Fall Break - Friday October 11 at 7 pm to Wednesday October 16 at 8:30 am – **No class Tuesday Oct 15**
* **Week 8** (Oct 10, 17) - Customer Support Engineer, Technical support, ITIL, Digitizing Customer Support, Customer Success. “A day in the life”, Guest speaker, Richard Wang, VP of Professional Services at Cresta
* **Week 9** (Oct 22, 24) – Release/Quality Engineer Persona: “A day in the life”, Release Engineering, Assessing Release Readiness. Guest speaker – Roland Flood, Senior Manager, Cisco
* **Week 10** (Oct 29, Oct 31) – Process and Product Metrics, Statistical Process Control, Human Factors
* **Week 11** (Nov 5, 7) - General Manager, “A day in the life”, Guest Speaker – Sri Hosakote, former Senior VP at Seagate, Cisco, etc
* **Week 12** (Nov 12, 14) – Alumni Talks: Amisha Gupta, Nikitha Gunnelly; Voice of Customer Workshop: Guest Speaker – Praveen Koushik, Director of Customer Experience Management at Tredence, Inc. (MEM 2017 Alumni)
* **Week 13** (Nov 19, 21) – Final Project Presentations, Guest Judges – TBD
* **Final Exam** (Nov 26, 1:25-2:40 pm)
	+ Thanksgiving recess: Tuesday Nov 26 at 10:30 pm to Monday Dec 2 at 8:30 am