

IMSE Instructors seek projects for IE 361

IMSE instructors for IE 361 – Statistical Quality Assurance are reaching out to the ISU community to recruit for and in support of student projects for the upcoming academic year. These faculty are in search of internal ISU projects; something you may need assistance on within your groups, teams, office, lab, or department here on campus or otherwise. Please find below information about the course, objectives, and requirements for projects as well as some examples to assist in what instructors are looking for in order to meet the needs of project goals and student learning. Projects are needed for both Fall and Spring semesters, but with a focus on internal ISU projects mainly this Fall. It is estimated that 15 projects are needed for Fall term and possibly 22 for the Spring. Please reach out via email to ie361@iastate.edu.

Some information about the course and the project is as follows.

Topics of IE 361: Statistical methods for process improvement. Simple quality assurance principles and tools. Measurement system precision and accuracy assessment. Control charts. Process capability assessment. Experimental design and analysis for process improvement. Significant external project in process improvement.

Main learning objectives: **1)** Students will learn key concepts and methods of engineering measurement quality assessment, process monitoring, process capability assessment, and data-driven process improvement. **2)** Students will gain experience applying the concepts and methods through lectures, labs, and team projects.

Project: As part of the requirements for IE 361, the students will conduct a ***process-oriented quality improvement*** project with a (real) client of their own choosing/recruiting. The ***goal*** of the project is to make data-driven recommendations to ***improve the quality of a process*** that a client cares about. The ***purpose*** of the project is to practice with the course material and to strengthen the skills of problem formulation and solution, cooperation with others, and professional oral and written communication.

Ideally, **1)** A client will work closely with a team, allows substantial "hands-on" contact with the process, and gain real benefit from successful project completion. **2)** The students will use what they have learned from IE 361, focus on a client process producing a good or service, complete a logical analysis of how that process works, formulate appropriate measures of process performance, collect process data, assess and make changes to establish process stability, characterize "stable process performance", and work to improve the process that was brought into stability.

A good project example: A team working with an important Iowa manufacturer won the best poster award of IE 361 in Fall 2018. The ***objective*** of the project was to help that company develop a standard for one of its most important product lines. The IE 361 team was given "close-to-hands-on" access to the production process and did its own measuring of important quality characteristics of the items produced. It designed a process improvement experiment in which the operating parameters of the production process were varied.

One important process variable had been traditionally set for a production run only on the basis of individual operator experience and informal judgment (for different versions of the product). This undisciplined operating procedure was contributing to the whole production run becoming waste. The IE 361 group planned a systematic exploration of the relationship of the set value of that parameter and important resulting product characteristics across a large number of variants of the product. On the basis of their experiment and subsequent data analysis, the group ***established a table*** giving standard values for the process parameter that lead to in-specification final characteristics for all variants of the product. This table will help operators set up their equipment with a projected savings of \$20,000 a year in out-of-specification product.

Many thanks for your support.