I2.02 Capacity Analysis Project

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Problem Statement

The focus behind this initiative is to determine the optimal number of engineering students with an average 10% increase in population that Texas State University can accommodate. This model will serve as a base and remain relatively generic with the idea of adding more majors into the model in the future.

Purpose

The aim of the project is to simulate the allocation of limited resources to the current population of student with a 10% growth rate forecast projection each year. To determine the number of faculty, course sections and classroom that will be needed when the population of student increase by 10% over the years, while optimizing the student and faculty ratio.

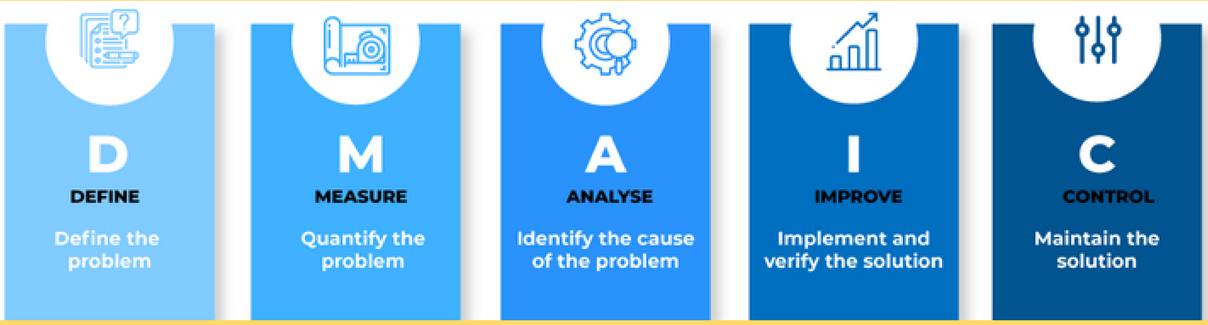
Objectives

- A Develop simulation model
- B Determine optimal number of sections, instructors, rooms, and students per term
- C Determine when capacity limit will be met with existing resources

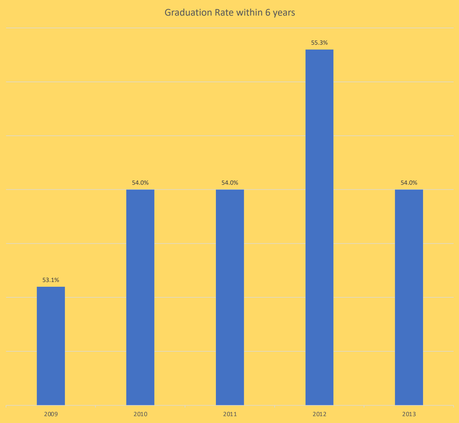
Information

Constraints include: Classrooms: the number of classrooms is a constraint because of the limited number of physical classrooms that are available for instruction, **Sections:** the number of sections is dependent on how many students are enrolled per course and instructor availability **Students per section**, **Instructors:** this is a high constraint and extremely limited resource as there are not enough instructors currently

Methodology



Measure

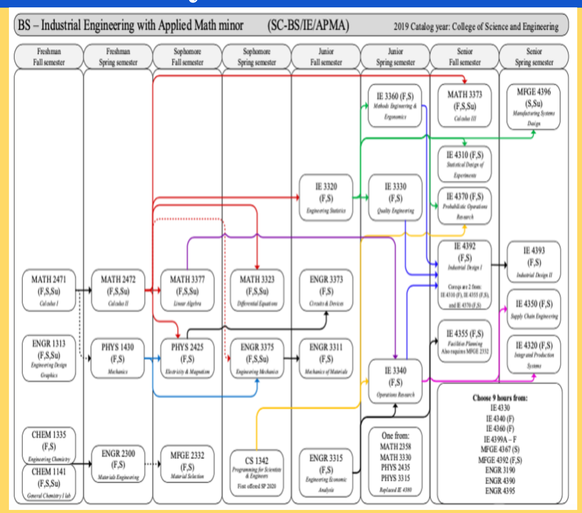


- Collect and analyze data including enrollment, graduation rate, transfer rate

Year	Transfer rate
2009	9%
2010	9%
2011	8.9%
2012	8.7%
2013	8.7%

Analyze Phase

IE Courses	Capacity	Min Capacity
IE 3320	30	15
IE 3360	24	16
IE 3330	40	20
IE 4310	30	15
IE 4370	24	15
IE 3340	24	14
IE 4355	40	20
IE 4392	30	20
IE 4393	20	10
IE 4350	24	10
IE 4320	24	12
MFGE 2332	36	14
MFGE L01 M	36	15
ENGR 1313	40	20
IE 4360	25	15
IE 4340	23	10
ENGR 4390	26	14



Future Plans

- -Java Script Coding
  - Stack Overflow
- Statistical Questions
  - Curate statistical questions prior to developing model

Evaluation Criteria

Objective	Weight
Develop simulation model	.50
Determine optimal number of sections	.30
Determine when capacity limit will be met with existing resources	.20

Team Members

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