

QMIPA

Core Competences

Statistics

- Data Analytics
- Data Representations



Optimization

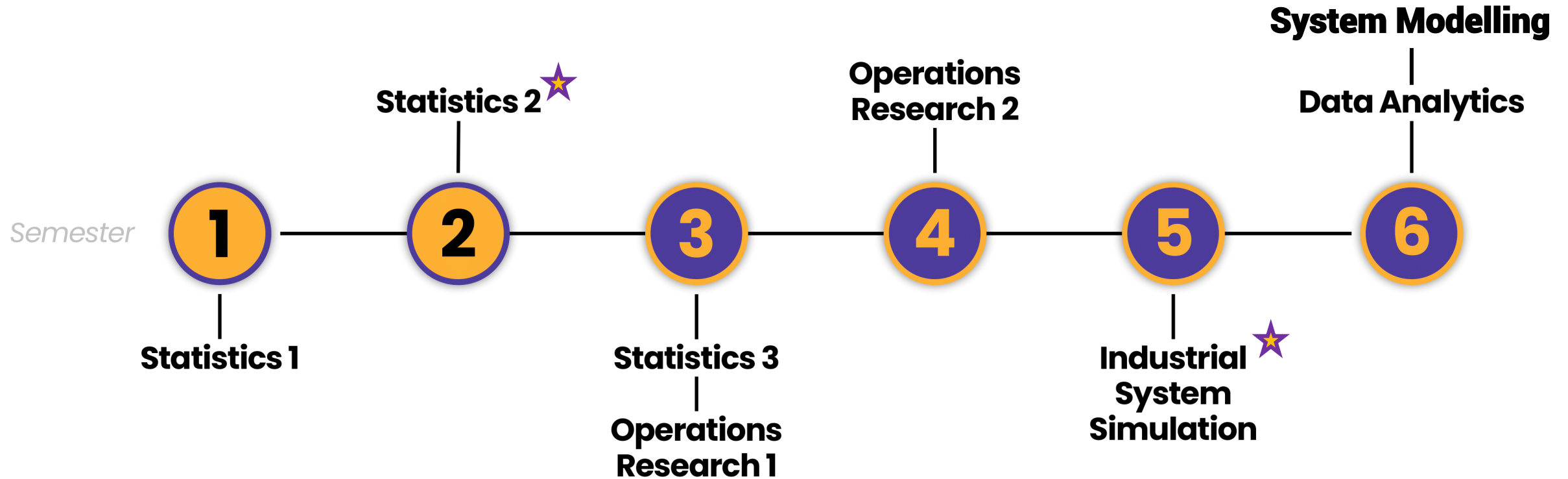
Searching for the best alternatives
(maximum / minimum)

Simulation

- Real system interpretations
- Multiple iterations

QMIPA

Main Course



★ : Case Based / Project Based

Course Content (1 of 2)

Statistics 1	Statistics 2	Statistics 3	Operations Research 1	Operations Research 2
<ul style="list-style-type: none">• Descriptive Statistics• Basic Probability Theory• Distribution (Discrete and Continuous)• Estimation	<ul style="list-style-type: none">• Hypothesis testing (1 and 2 samples)• ANOVA• Correlation Analysis• Simple linear regression• Non-parametric statistics	<ul style="list-style-type: none">• Data manipulation• Multiple linear regression• Cluster analysis• Principal Component Analysis• Linear Discriminant Analysis• Factor Analysis	<ul style="list-style-type: none">• Problem formulation• Graphical solution• SIMPLEX method• Sensitivity analysis• Network problems (transportation, transshipment, assignment, shortest route)	<ul style="list-style-type: none">• Integer Programming• Branch and Bound• Goal Programming• Dynamic Programming• Game theory• Markov Chain• Queuing Theory• Non-Linear Problem

Course Content (2 of 2)

Industrial System Simulation	Data Analytics	System Modelling
<ul style="list-style-type: none">• System Dynamics• Simulation Basics• Discrete Event Simulation• Monte Carlo Simulation• Conceptual Model Building• Data Collection and Input Analysis• Verification and Validation• Output Analysis• Comparing Systems & Scenarios	<ul style="list-style-type: none">• Data Preparation & Pre-processing• Multiple Linear Regression• Cluster Analysis: K-Means and Hierarchical Clustering)• Classification Technique: Naïve Bayes, Decision Tree, and Artificial Neural Network• Association Analysis	<ul style="list-style-type: none">• System Thinking and System Concepts• The Problem Situation• System Models and Diagrams• Hard OR methodology• Soft System Thinking• Decision Making Over Time• Incremental Analysis• Constrained Decision Making

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Elective Course

Optimization



Game Theory

Metaheuristics

Multi Criteria Decision Making

Statistics



Data Mining

Decision Analysis

Simulation



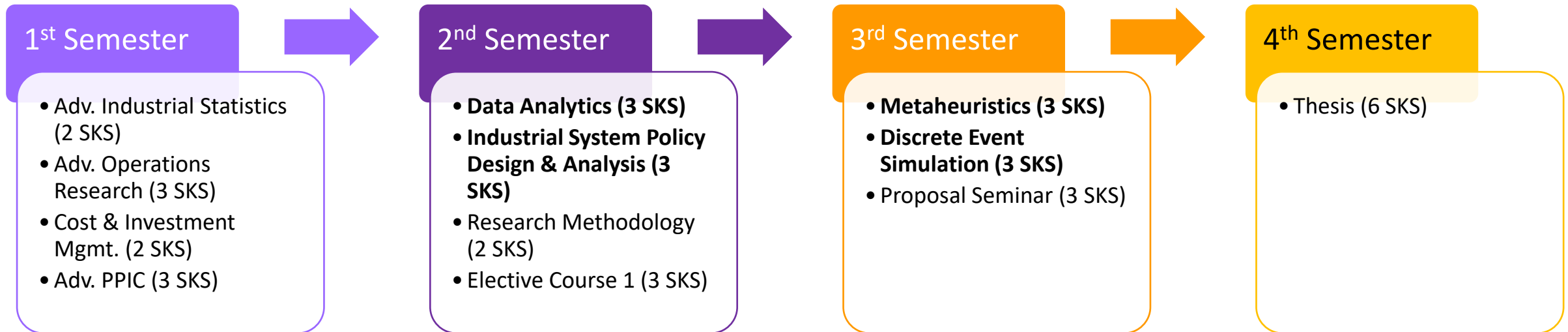
Agent Based System Modelling

Applied Discrete Simulation

System Dynamic Methodology

DECISION SYSTEMS

Master Program



Elective Courses:

1. Contemporary Game Theory
2. Data Mining with Application

QUANTITATIVE MODELLING & INDUSTRIAL POLICY ANALYSIS

Doctoral Program

