

IE Curriculum

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Freshman

Phys101	Phys102
Math101	Math102
GE100	IE102
Turk101	Turk102
Eng101	Eng102
Hist200	

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Sophomore

Math250	Math260
Math225	IE202
CS113	CS114
IE262	IE271
Hum111	Hum112
GE 250	GE 251

18 17

Junior

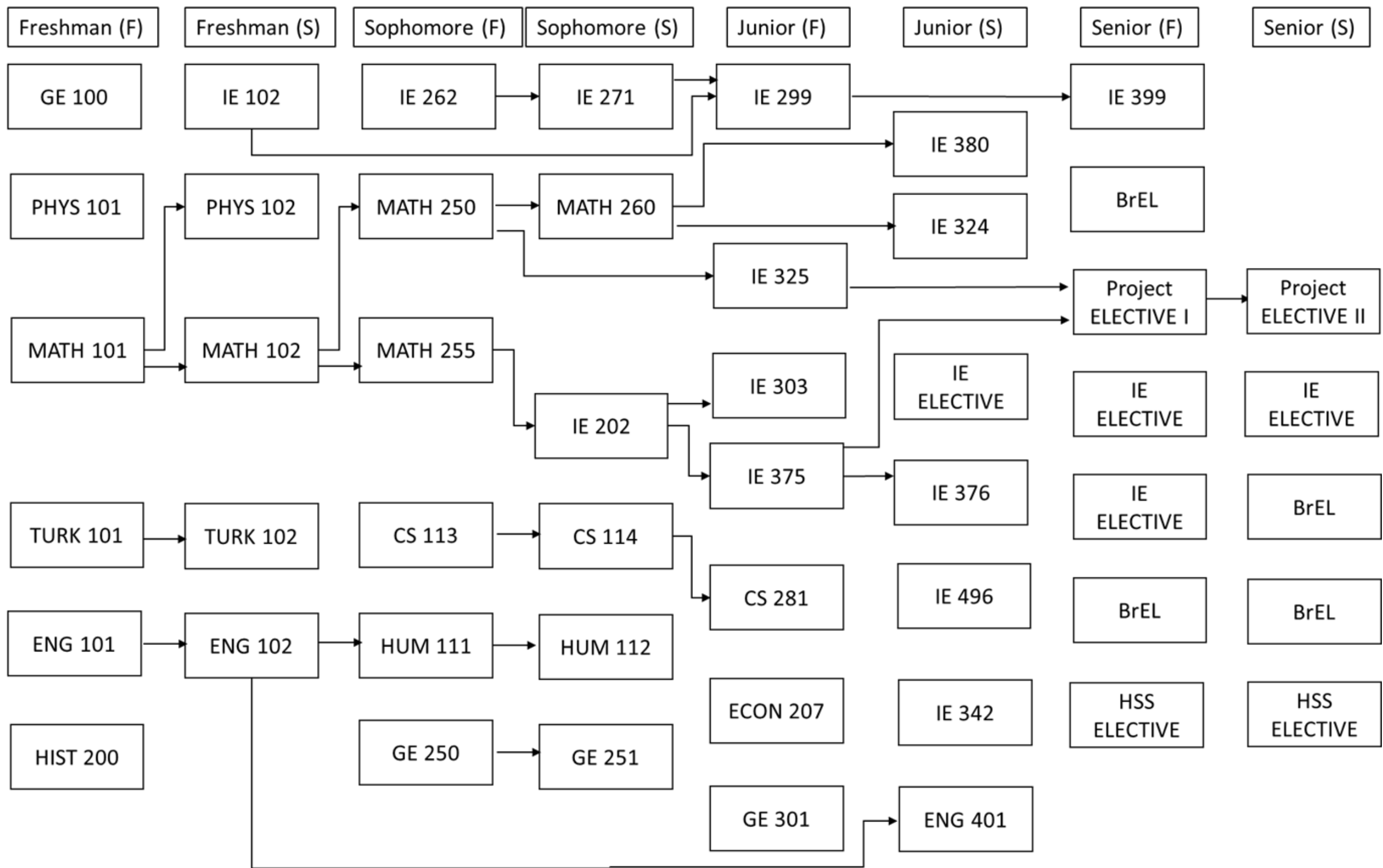
IE375	IE376
IE325	IE324
Econ 207	IE380
IE303	Eng401
CS281	IE342
GE 301	IE Elective
IE299	IE496

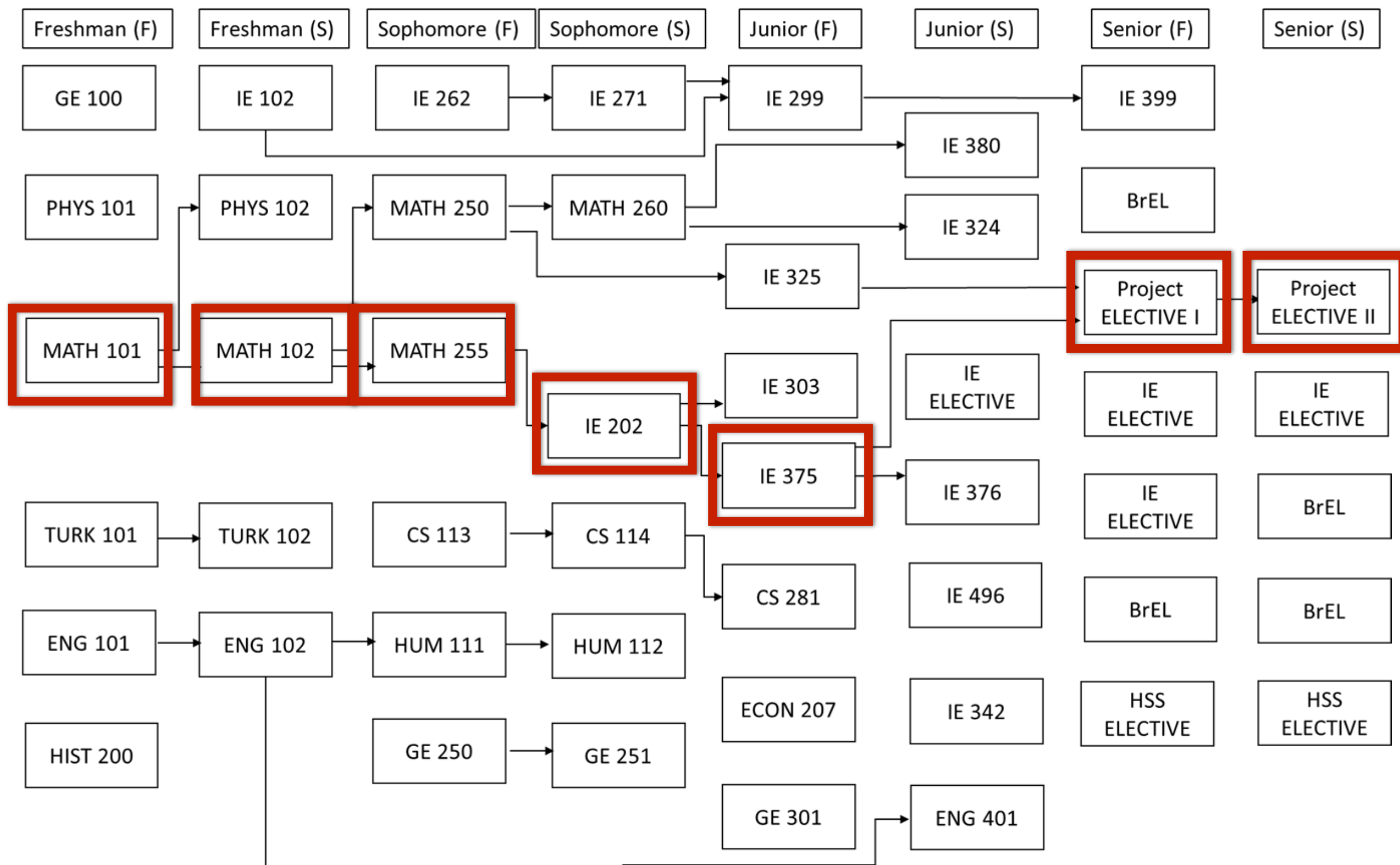
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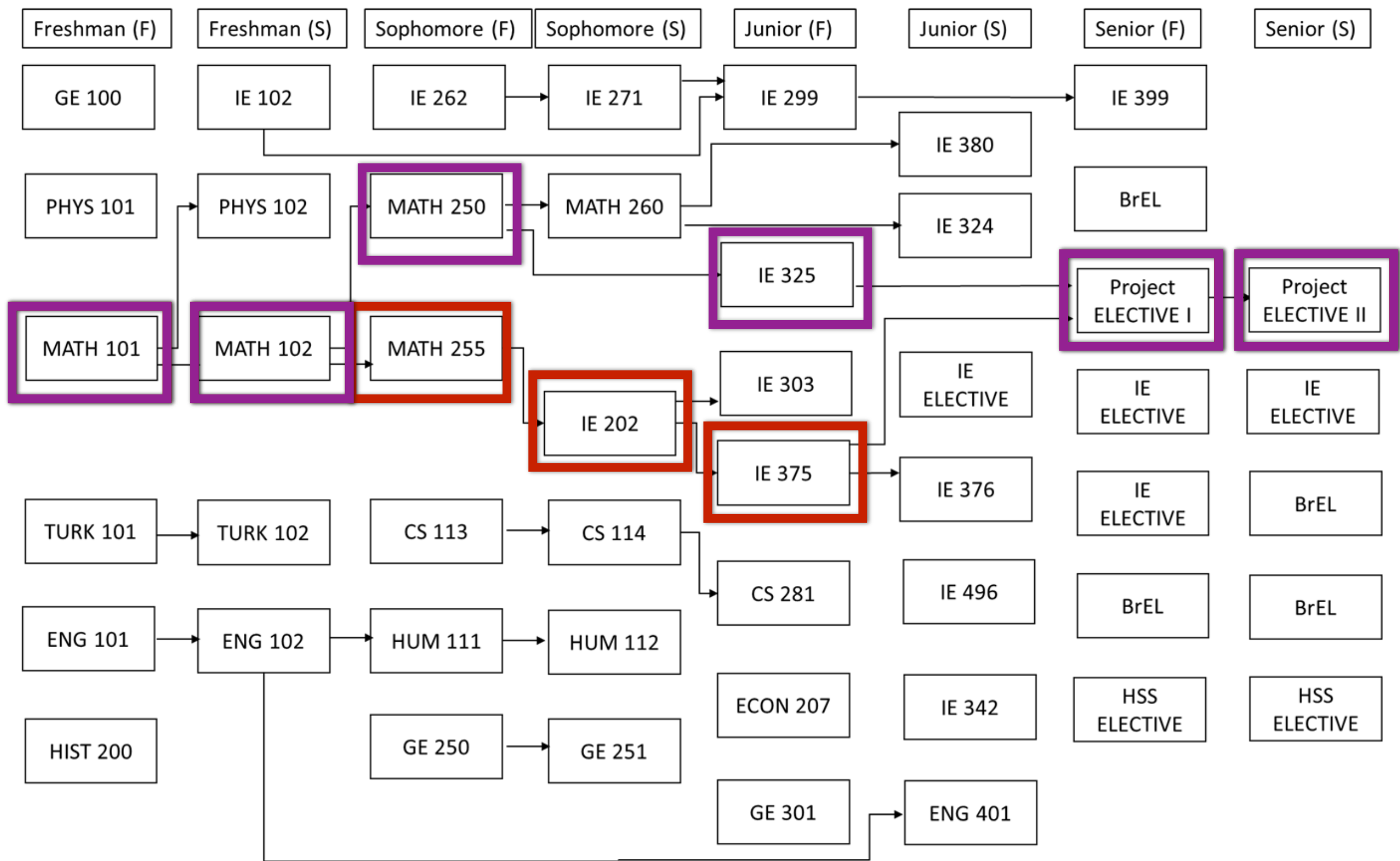
Senior

Project-1	Project-2
IE Elective	IE Elective
IE Elective	BrEL
BrEL	BrEL
HSS	HSS
IE399	

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IE Must Courses

- IE 102
- IE 262
- IE 271
- IE 299
- IE 399
- IE 202
- IE 325
- IE 324
- IE 496
- IE 303
- IE 375
- IE 324
- IE 376
- IE 380

- **IE 262 Manufacturing Processes**

- Introduction to numerical control, automation and manufacturing systems.
- Analysis of product and process design together with material selection for manufacturing.
- Laboratory use of traditional manufacturing processes, CNC programming, robotics, FMS cell controller, and related software.

- **IE 271 Operations Analysis and Design**

- Introduction to traditional industrial engineering.
- Design and improvement of manufacturing systems.
- Time study, work measurement, material handling systems, and layout design.

- **IE 202 Introduction to Modeling and Optimization**

- Introduction to mathematical modelling.
- Linear and integer models.
- Linear programming.

IE 324 Simulation

- Use and misuse of simulation as a decision tool.
- The use of simulation for estimation, and comparison of policies.
- Emphasis is primarily on applications in the areas of production management.

IE 325 Stochastic Models

- Basic queuing models and applications.
- Stochastic inventory models: periodic and continuous review.
- Introduction to stochastic maintenance models.

IE 303 Modeling and Methods in Optimization

- Extension of linear programming to different methodologies including network models, integer programming and dynamic programming.
- Discrete optimization: local search heuristics.

IE 375 Production Planning

- Design of production planning systems
- Forecasting;
- integrated production-inventory systems;
- multi-echelon supply networks;
- machine scheduling and capacity planning.

IE 376 Production Information Systems

- The role of computers and data bases in production systems.
- Fundamental concepts like:
 - ERP, lean production and JIT

IE 342 Engineering Economic Analysis

- Concepts of time value of money. Effects of depreciation, inflation, and taxation on economic decisions.
- Analysis of engineering decisions; principles and methodology of comparing decision alternatives.
- Cost-benefit analysis of public projects.
- Replacement analysis. Introduction to financial engineering.

IE 380 Quality Assurance and Reliability

- Various philosophies and definitions of quality.
- Statistical process control.
- Process capability.
- Experimental design and the Taguchi methods for quality improvement.
- Acceptance sampling.

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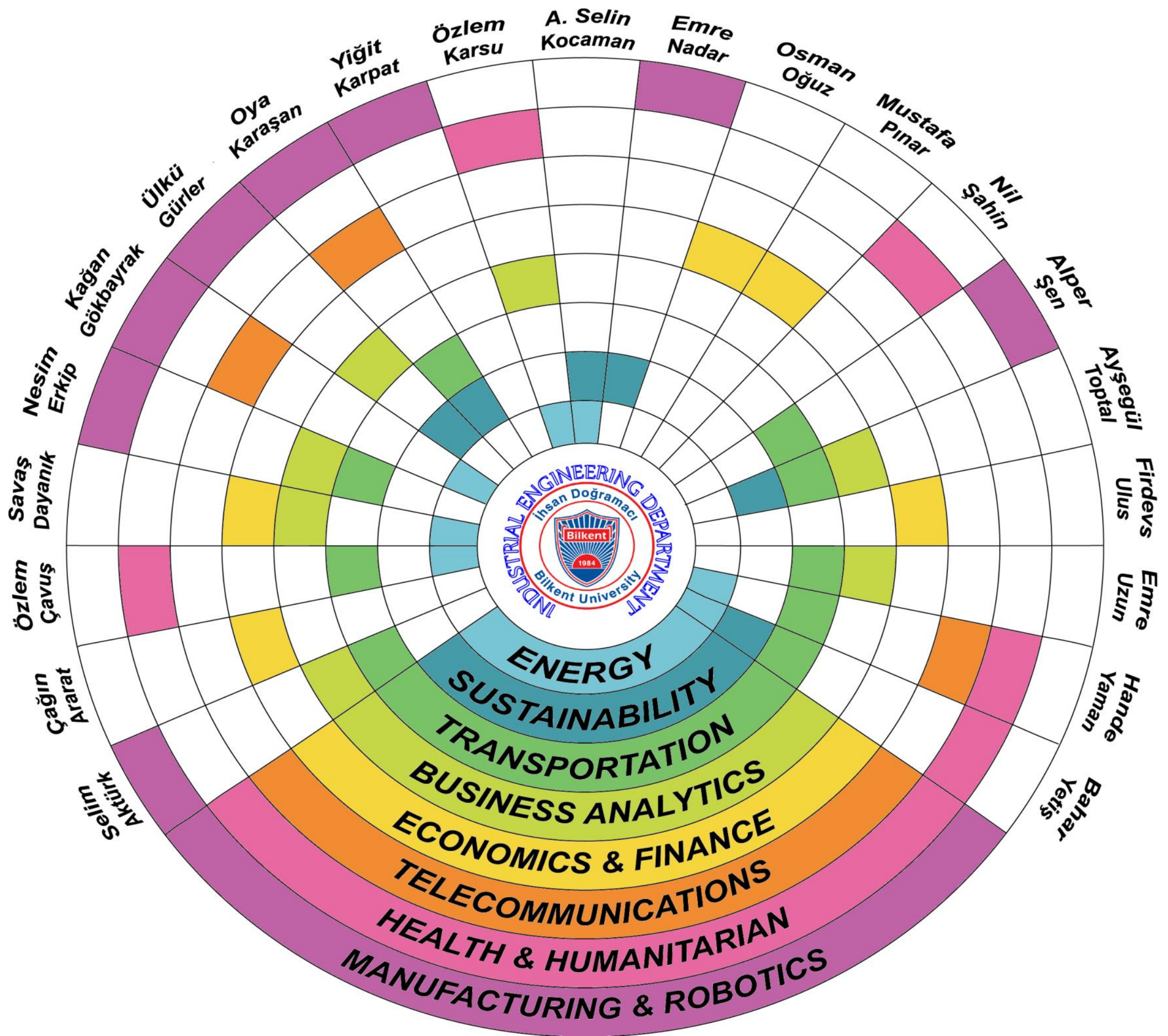
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IE Restricted Electives

- IE 411 Mathematical Programming
- IE 412 Large Scale Optimization and Apps
- IE 420 Heuristics in Optimization
- IE 421 Introduction to Stochastic Processes
- IE 422 Dynamic Programming
- IE 423 Forecasting Methods and Applications
- IE 427 Introduction to Defense Analysis
- IE 428 Project Scheduling
- IE 432 Quantitative Risk Management
- IE 436 Simulation Exp. Design and Analysis
- IE 440 Introduction to Financial Engineering
- IE 441 Cost Analysis and Control
- IE 443 Multi-Objective Decision Analysis
- IE 444 Operations Research in Finance
- IE 448 Financial Issues in Engineering Projects
- IE 451 Applied Data Analysis
- IE 453 Energy Systems Planning
- IE 455 Service Systems
- IE 457 Sustainable Operations
- IE 460 Quantitative Models in Supply Chain Mgmt
- IE 461 Supply Chain Management
- IE 462 Int. to Advanced Manufac. Technologies
- IE 463 Operations Scheduling
- IE 464 Inventory Planning Models
- IE 467 Emerging Trends in Manufacturing
- IE 468 Pricing and Revenue Optimization
- IE 469 Industrial Applications of OR
- IE 474 Facility Layout and Location
- IE 479 Distribution Logistics
- IE 482 Humanitarian Logistics
- IE 485 Decision Making in Health Care
- IE 490 Introduction to Research in IE and OR

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