Production Planning and Control

**Description:** This course focuses on methodologies for planning and controlling production systems. The course covers popular production management paradigms, such as Materials Requirements Planning (MRP), Enterprise Resources Planning (ERP), and Just-in-Time (JIT) concepts, and logistical planning techniques such as Economic Order Quantity (EOQ) and other statistical inventory control policies. This will be followed by detailed treatments of push and pull productions systems, shop floor control policies, production planning and scheduling, capacity management.

**Class Text:** “Factory Physics for Managers”, Edward Pund, Jeffery Bell and Mark L. Spearman.

**Learning Outcomes:**

Students will:

* understand the structure of production systems and techniques for performance measurement;
* understand the structure and dynamics of push and pull production systems including material requirements planning and just-in-time understand how to develop reliability test plans;
* develop skills and in-depth understanding of methods used for shop floor control, production scheduling and dispatching, workforce planning, and throughput analysis

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| **Topics** | 1. Analysis of Production Systems  * Management and Control * Quality and Variability * Performance measures |
|  | 1. Overview of Manufacturing Resource Planning  * Bill of Materials * Materials Requirement Planning (MRP) * Capacity Requirement Planning (CRP) * Master production scheduling * Shop floor control * Inventory control   + Economic Order Quantity   + News vendor model   + Base stock model |
|  | 1. Overview of Just-in-Time (JIT)  * JIT Goals * JIT Production Policies   + Production smoothing and capacity buffers   + Setup reduction   + Cross-training   + Total Quality Management * Kanban system |
|  | 1. Analysis of Production Systems  * Shop Floor Control   + Gross capacity control   + Bottleneck planning   + Throughput analysis * Production scheduling   + Classical scheduling models   + Dispatching   + Bottleneck scheduling * Production planning   + Product mix planning   + Workforce planning |
|  | 1. Implementing control tactics and leadership |

**Grading Policy:**

Homeworks 25%

Quizzes 25%

Exam 1 25%

Exam 2 25%

**Grading scheme:**

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| **Grade** | **Range** |
| A | 90% to 100% |
| B | 80% to 90% |
| C | 70% to 80% |
| D | 60% to 70% |
| F | Below 60% |

**Learning Accommodations:**

If needed, we will make accommodations for students with documented disabilities. These accommodations must be arranged in advance and in accordance with the ADAPTS office (http://www.adapts.gatech.edu).

**Academic Honor Code:**

*All course participants (instructor, teaching assistants, and students) are expected and required to abide by the Georgia Tech Honor Code. Please familiarize yourself with the code, and use it to guide your conduct. Specifically, you must do your own work in all homeworks and exams.*

For any questions involving these or any other Academic Honor Code issues, please visit [www.honor.gatech.edu.](http://www.honor.gatech.edu)