

## *ERP (21-550)*

*Advanced Manufacturing Laboratory  
Department of Industrial Engineering  
Sharif University of Technology*

*Session #6*



## *Course Description*

### ▪ *Instructor*

- *Omid Fatahi Valilai, Ph.D. Industrial Engineering Department, Sharif University of Technology*
- *Email: [FValilai@sharif.edu](mailto:FValilai@sharif.edu), Tel: 6616-5706*
- *Website: [Sharif.edu/~fvalilai](http://Sharif.edu/~fvalilai)*

### ▪ *Class time*

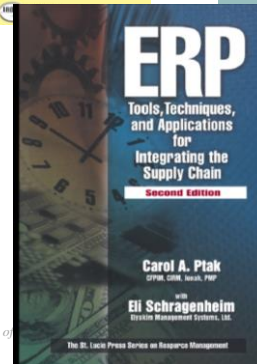
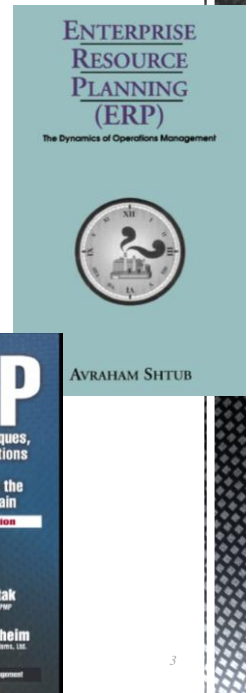
- *Sunday-Tuesday*                      *16:30-18:30*
- *Wednesday*                              *09:00-12:00*

### ▪ *Course evaluation*

- *Mid-term*                                      *(30%)*
- *Final exam*                                      *(40%)*
- *Quiz*    *(5%)*
- *Exercise*                                        *(10%)*
- *ERP Lab*                                        *(15%)*

## Course Description (Continued ...)

- **Mid-term session:**
  - Sunday : 8<sup>th</sup> Azar 1394, 16:30 ~ 18:00
- **Final Exam:**
  - Sunday: 27<sup>th</sup> Dey 1394, 09:00 ~ 10:30
- **Reference:**
  - Shtub, A., "Enterprise Resource Planning (ERP)- The dynamics of operations management", 2002, Kluwer Academic Publishers
  - Ptak, Carol A., "ERP Tools, Techniques, and Applications for Integrating the Supply Chain", 2004, The CRC Press
  - Fui, F., Nah, H., "Enterprise Resource Planning", 2002, IRM Press



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- **Final Exam:**
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- **Reference:**
  - Daniel E. O'leary, "Enterprise Resource Planning Systems Systems, Life Cycle, Electronic Commerce, and Risk", 2000, Cambridge University Press

### Enterprise Resource Planning Systems

Systems, Life Cycle, Electronic Commerce, and Risk



Daniel E. O'Leary

CAMBRIDGE [www.cambridge.org/978052179152](http://www.cambridge.org/978052179152)

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## *Course Description (Continued..)*

- *Contents:*
  - *Enterprise Management*
  - *Operations Management*
  - *The Evolution of ERP Systems: A Historical*
  - *Organizations and organizational structures*
  - *Scheduling*
  - *Purchasing and inventory management*
  - *Marketing considerations*
  - *ERP selection and implementation*

## *Course Description (Continued..)*

- *Contents:*
  - *Enterprise Management*
    - *History of Enterprise Resource Planning*
  - *The Theory of Constraints and ERP*
  - *Sales and Operations Planning*
  - *Buffer Resource Strategy*
  - *Enterprise Resource Management*
  - *Integrating the Supply Chain to Reap the Rewards*
  - *Strategic Sourcing and Procurement*

## Enterprise Management

- **Contents:**
  - *The Theory of Constraints and ERP*
    - *The different mentality between executives and information system professionals has caused the two areas to develop in different directions.*
  - *The Enterprise Resource Planning (ERP) information system may provide the bridge for better mutual understanding as it touches a basic element in management that really needs support.*

## Enterprise Management

- **Contents:**
  - *The Theory of Constraints and ERP*
    - *TOC deals with the problem of managing and improving complex systems using a holistic, logical, and win/win approach.*
  - *It challenges the following three basic assumptions relating to how we are currently trying to manage and improve:*
    - *Every local improvement is an improvement for the system as a whole.*
    - *Every problem needs to be addressed directly and independently to improve the system as a whole.*
    - *In order for one part in the system to win, another must lose.*

## Enterprise Management

### ▪ Contents:

- *The Theory of Constraints and ERP*
  - *How should one assess the true benefits of any new technology?*
  
- *The Theory of Constraints (TOC) suggests the following six questions for checking the value of any new technology like ERP*
  - *What Is the Main Power of the New Technology?*
  - *What Limitation Does the New Technology Diminish?*
  - *What Rules Helped Us to Accommodate the Limitation?*
  - *What Rules Should We Use Now?*
  - *Do the New Rules Require Any Change in the Way We Use the Technology?*
  - *How Do We Cause the Change?*

## Enterprise Management

### ▪ Contents:

- *The Theory of Constraints and ERP*
  - *The holistic approach of TOC suggests the simplification of the complexity of the organization by different means than by letting every function behave almost independently.*
  
- *TOC developed out of an information system called optimized production technology (OPT) developed in the late 1970s and early 1980s.*
  - *This is one of the oldest finite-capacity schedulers for manufacturing organization and it is still available today.*
  
- *The special case of OPT is that its developers had found out that the underlining principles of the software conflict with some managerial norms.*
  - *The conflict was devastating to the proper implementation of this new management approach.*

## Enterprise Management

- *Contents:*
  - *The Theory of Constraints and ERP*
    - *Four basic principles/assumptions constitute the core of TOC:*
      - *The organization has a goal it wishes to maximize indefinitely.*
      - *An organization can achieve more than the sum of its parts acting as if it is independent.*
      - *The performance of an organization is constrained by very few variables.*
      - *Complex as the human-based organization can be, it is still subject to cause-effect relationships.*

## Enterprise Management

- *Contents:*
  - *The Theory of Constraints and ERP*
    - *Using the four basic principles and applying common sense logic, Dr. Goldratt developed the five focusing steps of TOC.*
      - *Identify the system's constraints.*
      - *Decide how to exploit the system's constraints.*
      - *Subordinate everything else to the above decisions.*
      - *Elevate the system's constraints.*
      - *Go back to Step 1 but do not allow inertia to cause a system constraint.*

## Enterprise Management

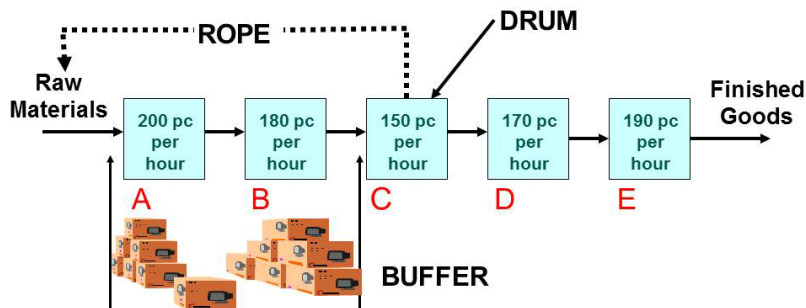
- **Contents:**
  - *The Theory of Constraints and ERP*
    - *Four specific TOC techniques:*
      - *Shop floor planning method*
  - *Control system*
  - *Multi-project planning and control method*
  - *TOC management accounting approach*

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## Enterprise Management

- **Contents:**
  - *The Theory of Constraints and ERP*
    - *TOC emerged from the shop floor.*
  - *The Drum-Buffer-Rope (DBR) methodology is a shop-floor planning scheme that has replaced the OPT method on how to schedule the resources.*



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# *Enterprise Management*

- *Contents:*

- *The Theory of Constraints and ERP*
  - *TOC emerged from the shop floor.*
  - *The Drum-Buffer-Rope (DBR) methodology is a shop-floor planning scheme that has replaced the OPT method on how to schedule the resources.*
  - *Later, a control methodology called Buffer Management was developed to complement the planning mechanism.*
  - *In the 1990s, a parallel effort was carried out to develop a TOC methodology for project management, called the critical chain.*
  - *The most important of all is the unique way TOC is treating the global financial measurement and its impact on management accounting.*
  - *A TOC methodology for distribution networks was developed to establish a better solution that reduces both the overall inventories in the network and shortages, improving the service level as well as sales.*