

## *ERP (21-550)*

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

*Session #14*



## *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*
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### ▪ *Class time*

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

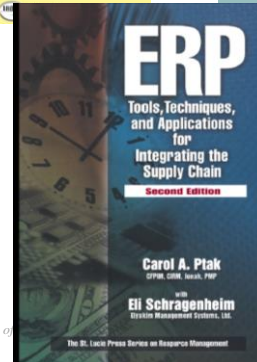
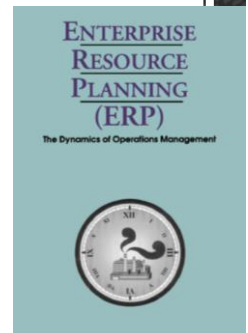
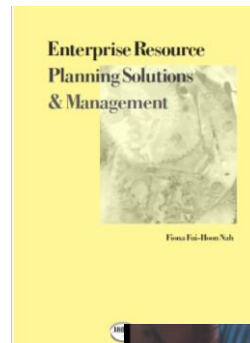
### ▪ *Course evaluation*

- *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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- **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

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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*

## *Course Description (Continued..)*

- *Contents:*
  - *Operations Management*
    - *Operations Planning (Material and Capacity Requirements Planning)*
  - *Product Life Cycle Management*
  - *Manufacturing Execution System*
  - *Distribution*

## *Operations Management*

- *Material and capacity requirements Planning:*
  - *Operations planning is the detailed calculation of the material and capacity required to execute the Sales and Operations Plan.*
  - *Material Requirements Planning (MRP) pulls together all the requirements for an individual part from the variety of demand sources and calculates a recommend replenishment plan that meets all the requirements.*
  - *In addition, MRP also provides information by exception when the demands and the expected supply are out of alignment.*
  - *This information allows the planner to react specifically to those areas requiring attention rather than requiring a routine detailed examination of every part.*

## Operations Management

- *Material and capacity requirements Planning:*
  - *Detailed capacity requirements planning (CRP) provides the visibility of demand for each of the work centers.*
  - *This forward visibility allows the operations manager to more accurately plan the overall strategy for the addition or reduction of capacity.*
  - *This proactive approach to capacity management allows the company to make decisions and plans at a time when many options are possible rather than during a time of crisis.*
  - *Integrating detailed MRP and CRP is a key implementation success strategy as it can help in the overall proactive identification and resolution of bottlenecks and identify suspected data errors.*

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## Operations Management

- *Demand Management:*
  - *Demand management is the function of recognizing all demands for products and services in order to support the customers in the marketplace.*
  - *The demand management process also includes doing what is required to help make the demand happen and prioritizing demand when supply is lacking.*
  - *Conversely, demand management is also concerned about recognizing when demand is substantially unusual (either positive or negative) and how plans need to be changed to react.*
  - *Demand management facilitates the planning and utilization of resources for profitable business results.*
    - *Overall demand management maintains an intense focus on the customer.*

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## Operations Management

- **Demand Management:**
  - *Demand planning is directly dependent on the quality of the demand information.*
  - *The process must be defined and enabled so that the best, most timely demand information is available.*
  - *To facilitate this process many companies are establishing the position of demand manager or demand coordinator in order to facilitate and coordinate the development of the demand plans for the business.*
  - *There should be a formal management demand review of the monthly updated demand plan/forecast as part of the Sales and Operations Planning process.*
  - *One of the most difficult parts of demand management is distinguishing between small changes in demand patterns that are really a signal of significant shifts in the market or one-time demand spikes that are unusual and not recurring.*

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## Operations Management

- **Demand Management:**

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Prediction of customer demands for production planning – Automated selection and configuration of suitable prediction methods

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## Operations Management

- *Demand Management:*
  - *Forecast*
  - *Usually the demand planning process begins with a forecast.*
  
  - *The forecast does not need to be 100% accurate.*
    - *Unless the total lead-time of the supply chain is less than the customer's response time expectation, a forecast is necessary in order to drive any business.*
  
  - *Good usable forecasts result from hard work, timely reviews, and updates, by the appropriate people using customer input, judgment, and software support.*

## Operations Management

- *Demand Management:*
  - *Forecast*
  - *The forecast and management of the business need to be at the same level of aggregation.*
  
  - *The strategic vision and business plan should be supported by the forecast. The forecast also helps provide a target for sales.*
    - *In turn, through the material and capacity planning process, defines the required resources (equipment, people, materials, and services) to support the plan.*
  
  - *The forecast is a key driver of the business planning process.*