Enterprise Application Integration

Course Title: Enterprise Application Integration	
Description	Enterprise Application Integration (EAI) brings together different functions—such as Marketing, finance, accounting, human resources, procurement, supply chain management, manufacturing, sales, inventory management, and purchasing—into one central system, allowing departments to share information and work more efficiently. Enterprise Application Integration (EAI) refers to the process of connecting and coordinating different software applications and systems within an organization. Its purpose is to enable smooth communication and efficient data exchange across various platforms. EAI seeks to unify distinct systems such as CRM, ERP, HRM, and others, allowing them to operate collaboratively and effectively. This integration enhances operational efficiency, ensures data consistency, and supports better decision-making across the enterprise. Typically, EAI solutions make use of middleware technologies to streamline and manage the flow of information between diverse applications.
Semester	Spring
Neptun code	GEIAK682-Ma
Instructor	Dr. Samad Dadvandipour, Associate Professor
Credit Hours	2+2
Attendance Requirement	Students must participate in 75% of classes and pass two midterm pre-exams during the semester to obtain the necessary signature for eligibility for the final exam
Examination	Remark: The responsible tutors deliver the topics and lecture presentations during the semester. The PPT format lecture presentations or a book in a PDF file will be handed to the students via Neptune or email before the pre-exams and the final exam

Topics and Schedule

Week #	Topic
Week 1	Introduction to EAI Systems, Topics: What is EAI?, Evolution and history, Learning Outcome: Understand the definition, purpose, and history of EAI systems.
Week 2	....
Week 3	EAI System Architecture and Components, System architecture (client-server, web-based, cloud), Modules and their functionalities, Centralized databases and real-time data processing, Standard Operating System, Learning Outcome: Identify and describe core, EAI ERP modules and system structures.
Week 4	Production Planning and Control, Topics: Role of EAI in production planning, Process flow from demand forecasting to production scheduling, Shop floor control and work order management, Distributed Controlling System (DCS), Automated Manufacturing Cells-Illustration of Different Examples, Learning Outcome: Understand how EAI supports manufacturing and production processes.
Week 5	Material Requirement Planning (MRP-I), Topics: Introduction to MRP concepts, Bill of Materials (BOM) and inventory management, Master Production Schedule (MPS), Learning Outcome: Explain the principles and objectives of MRP-I.
Week 6	Manufacturing Resource Planning (MRP-II), Topics: From MRP-I to MRP-II: evolution and integration, Capacity planning, scheduling, and resource allocation, Linking production planning with finance and HR, Learning Outcome: Differentiate between MRP-I and MRP-II and their integration in ERP.

Week 7	Supply Chain and Procurement in EAI, Topics: Supplier relationship management, Purchasing and procurement workflows, Inventory and stock management, Learning Outcome: Understand how EAI systems optimize supply chain operations.
Week 8	Finance and Accounting Modules, Topics: Financial accounting (FA), management accounting (CO), and asset management, Integration of financial data with other modules, Real-time reporting and analytics, Learning Outcome: Explain how EAI and ERP support financial management and control.
Week 9	Human Resource Management in EAI, Topics: HR modules: payroll, recruitment, training, and performance management, Integration of HR with finance and operations, Role of ERP in workforce planning, Learning Outcome: Understand how EAI streamlines HR functions.
Week 10	Enterprise Application Integration (EAI), Topics:, Concept and importance of EAI, Integration of ERP with CRM, SCM, and other enterprise applications, Middleware, APIs, and data exchange standards, Learning Outcome: Explain how ERP connects with other enterprise systems.
Week 11	EAI Implementation and Deployment, Topics: EAI implementation strategies (Big Bang, Phased, Parallel), Change management and user training, Common challenges and risk factors in implementation, Learning Outcome: Identify best practices and challenges in EAI deployment.
Week 12	EAI Vendors and Market Overview, Topics: Major EAI providers: SAP, Oracle, Microsoft, IBM, PeopleSoft, J.D. Edwards, EAI system comparison (features, advantages, industry applications), Learning Outcome: Compare leading EAI solutions and their market positioning.
Week 13	EAI Trends and Future Directions, Topics: Modern trends: AI, IoT, big data, and analytics integration, Mobile and digital transformation, The future of EAI in connection with ERP: Intelligent ERP (iERP), Learning Outcome: Discuss emerging technologies shaping ERP evolution.
Week 14	Course Review and Final Assessment, Topics: Review of all EAI modules and integration concepts, Summary of key EAI functionalities and benefits

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