

Faculty of Engineering

Al-IsraUniversity

Master Program in Engineering Projects Management (EPM)

2019/2020

Course Description

04037101-Advance Engineering Projects Management:

The Project Manager Nomination and Responsibilities; Development of Project work plan; task preparing, Advanced Techniques for Project Planning and Scheduling; Project Contracting and Delivering Strategies; The Project Progress Measurement and Project Tracking by using Earned Value Techniques; The Project Cost and Time Evaluation; Project Close out Procedures; the Management Skills for Engineering Projects.

04037201- Management Information System (MIS):

This unit will assist the student in understanding the challenges, opportunities and risks involved in information technology management. The unit introduces to management information systems foundations; current trends; MIS technology fundamentals; its applications to business functions and management practice and in an ethical manner. The impact of information technology on project management will be stressed since it affects the planning process. The unit will also cover various system applications for specific project and business functions and their importance to today's manager.

The unit may conclude with student's MIS project relevant to the Jordanian market. It is expected that by the end of the unit student will have a solid foundation for making judgment on why and how to participate in MIS activities.

04037202-Engineering Project Resource Management:

Review of Project Management, Introduction: Preliminaries and definitions of resources in engineering projects, Resources for planning and scheduling projects. Illustrative examples and case-studies, Mathematical Analysis: CPM and PERT methods, Schedule compression- crashing, fast tracking and simulation, Resource leveling heuristic, Critical chain method, Schedule- updates, Baseline, resource baseline, new target schedules, Recourses allocation- Limiting assumptions, Risk assumptions, Recourses allocation methods, Resources-constrained projects, Multiple Project Resource Scheduling Problem: Using resource schedule to develop a project cost baseline, Multiple project resources optimization, Allocating Time and Resources in Project Management Under Uncertainty, Resource Planning and Resource Allocation in the construction Industry.

04037102- Operations Research:

This includes: Introduction and preliminaries, Linear and Nonlinear Programming, Integer and Goal programming, Dynamic programming, Transportation problems, Assignment Problems, Queuing theory, Decision theory, Implementation of OR in Project management and Production scheduling.

04037103- Applied Statistical Research:

This course includes: Advanced analytical course in applied statistical methods: hypothesis test, multiple correlation and regression, T and F distributions, analysis of variance, planned comparisons and post HOC comparisons, analysis of covariance, and nonparametric techniques. Utilizing of SPSS statistical programming package.

04037203- Quality Management:

The development of Total Quality Management concept; Total Quality Management Model and its application; The Historical Review of the Quality Management and Total Quality Management; The Principles of Quality Management and Total Quality Management; Implementation of the Total Quality Management Principles in Engineering Fields; The Planning Techniques of Total Quality Management; The Control Techniques of Total Quality Management; The Five Steps to Increase Profitability and Competitiveness; The Total Quality Management for Organization Changes

04037204- Construction Methods and Technology:

Construction management and construction methods and techniques; Engineering Fundamentals of Earth Moving Works; Soil Stabilization and Compaction; Earthmoving Equipments (Tractors and related equipments, scrapers, trucks and wagons); Operation Analysis; Belt Conveyor Systems; Drilling Rock and Earth; Tunnels and Tunneling; Earth Grouting; Concreting and Concrete Production; Piles and Pile Driving Equipments

04037205 – Energy Management:

Introduction and primaries, effective EM, energy auditing, EM systems and EM control systems, Building envelope, Electrical EM Thermal energy storage, Waste-heat recovery, Energy security, reliability and maintenance, Economic analysis and financing EM project

04037112- Traffic and Highway System Management:

Introduction to Traffic and Highway Safety Management ; Highway Safety Improvement Program; Highway Safety Design and Operation Management; Traffic Demand management;

Traffic Safety Strategies; Traffic Speed Reduction ; Traffic Calming; Traffic Congestion Management; Access Control Management; Public Transit System Management; Pedestrian Safety and Pedestrian Facilities Management; Intelligent Transportation System; 40363 Noise Impact management.

04037206- Industrial Operation Management:

Course Description: Introduction and preliminaries, Nonlinear programming, Multi-stage decision Problem; applications of traveling journey, Dynamic programming; principle of optimality and its application resources investment, Transportation problem; mathematical model and solving methods for transportation problem Assignment Problem; zero-one programming model and Hungarian method, Queuing theory; empirical Queuing models and their simulation, Decision theory; deterministic, under risk and uncertainty , Project management; phases and project management, Production scheduling; single-machine, flow shop and job scheduling .

04037104- Research Methodology:

Principles of the Scientific Method: Theory and Measurement ,Principles of the Scientific Method: Validity and Control ,Ethical Issues in a Scientific Research ,Non-Experimental Research: Observational, Archival, and Case-Study Research ,Non-Experimental Research: Survey Research ,Single-Subject Experimental Research ,Group Experimental Research: Single-Factor Designs ,Group Experimental Research: Factorial Designs ,Quasi Experimentation ,Reporting Research Results, Conclusions: Bias and Limitations of Experimental Scientifically (Epilogue).

04037207- Selected Topics:

The syllabus of the model will be identified according to the semester program.

04037111 - Computers' Network Management:

Study systems administration, and LAN/WAN terminology and administration. Manage and maintain the typically complex computing environment of medium to large sized organizations. Early in the program, building up a complete personal computer, which will provide you with the perfect learning tool for the remainder of the program to use in home, learn how to use one of the most popular application software suites.

04037113- Simulations and Modeling in Engineering:

This course is to present the procedural steps required for modeling and simulating the basic dynamic system problems in SIMULINK which follow some definitive model. Also, it covers some modeling techniques to check the models stability and error analysis to report leading-edge scientific contributions from mathematics, computer science, various sub-disciplines of

engineering, management, psychology and cross-cultural communication, all of which focus on the modeling and simulation of human-centered engineering systems.

04037105- Advance Engineering Economy:

The course topics are directed analysis of capital investments in engineering and technical projects. Topics include decision analysis methods, cash flows, revenue requirements, activity-based analysis, multi-attribute decisions, probabilistic analysis and sensitivity/risk analysis.

04037211- Maintenance Management

This course provides management education in maintaining the technical assets of an enterprise. The management of maintenance resources and processes are included in the course content. The course covers the following topics: Principles of maintenance management, Condition-based maintenance, managing maintenance workers, Managing finances in maintenance, Managing maintenance information, Maintenance improvement and strategy, Risk management Maintenance approaches and strategies.

04037114- Renewable Energy Technology

The course content includes: energy technology, renewable energy in a sustainable future, the physics and science behind climate change, and why renewable energy is necessary for the future. Students will understand different types of renewable energy technology, how they work, their advantages, disadvantages, and limitations. The types of renewable energy and technology studied include: wind energy, solar (thermal and photovoltaic), hydro-electric, bio-energy, tidal power, wave energy, geothermal energy, ocean thermal, fuel cells, heat pump systems, and high voltage DC energy transport. The availability and integration of these energy types and technologies are also studied to understand how renewable energy can work as a compliment to and replacement for conventional technologies.

04037115-Contract and Legislation

Fundamental of Legislation and General Theoay of Obligation and Engineering Contracts,in Addition to FIDIC Contracts Labor Low , Jordanian Arbitration Low and Ethics of Engineering in General and Civil low Related to Engineering Contract.

04037116-Risk Management

Organizing the Daily Risks of Engineering Projects and Analyzing Risks through Qualitative and Auantitative Methods, Developing The Strategy of Responding to Risks, Managing Projects through to Use Risk management plans and the size of risks and minimize the the damage management

04037212-Building information modeling

Building information modeling (BIM) concept, BIM is intelligent BD model based process that gives architecture , engineering and construction (AEC) professionals the insight and tools to more efficiency plan , design contract and manage building and infrastructure .

04037213-Managerial Accounting

The course include traditional topics costingthe products, prices methods of estimating costs and standards forecasting cashflows, preparing cost reports ,managing finance and budgeting