

المفردات	الساعات النظرية	الوحدات	المادة	الكورس	التخصص	القسم	الكلية	ت
Review of (linear algebra,application networks, structures and estimation),lagrange multiplier,laplace equation, boundary value problem,Minimum principles and calculus of variations,fourier transform,convolution, vector differential calculus,legendre polynomials,Bessel equation and Bessel function, stochastic process, spectral analysis,Markov chains, centrallimit theorem, Dynamical system,linear and non-linear systems,phase space dynamics,fixed points, limit cycles and attractors.	2	2	Advanced Mathematics	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	1
Ultrasonic machining,abrasive flow machining, water jet cutting,Electro-chemical machining,electrical discharge machining,plasma arc machinig,laser applications in manufacturing processes,rapid prototyping,surface properties of non-traditional processed materials.	2	2	Advanced Manufactueing Processes	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	2
introduction to industrial robots,building blocks of automation,(Electrical,pneumatic and hydraulic) components,automated material handling systems,CNC machines, automated barcodes systems, programming logic control (PLC), industrial applications of robots and mechanization of parts handling,end of arm tooling, planning robot implementation, industrial logic control systems and logic diagramming, programming programmable controllers, work cell programming.	2	2	Industrial Robotics and Automated Manufacturing	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	3

introduction to CAD/CAM hardware and software, graphics and product definition and uses of CAD/CAM standards (IGES,STEP,DXF), aspects toward perfected CAD/CAM connectivity, feature-based and feature-recognition CAD/CAM, automated coding and classification, Computer-aided process planning (CAPP),assembly and subassembly using CAD packages,productibility and manufacturability, mathematical bases of geometric modeling,user interfaces of CAD/CAM systems, CAD/CAM data exchange,knowledge based machining, Use of CAM packages (master CAM, surf CAM)	2	2	Advaned CAD/CAM	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	4
	2	2	Technical English Language 1	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	5
computer numerical control and part programming, computer and CNC architecture,logics and programmable logic controllers,discrete control system design, command generation for motion control, actuators (DC,AC and stepping motors), motion control system.	2	2	Computer Control systems	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	6
introduction to micromachining and MEMS, MEMS febrication,micro and Nano science,microscopic energy transport,MEMS devices, physics and design, experimental mechanics of MEMS, sensors-actuators and signal processing, interfacial phenomena, Micro/Nano fluids.	2	2	Micro and Nano systems techonology	الاول	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	7
influence of process variables on manufacturing, fundamentals of finite element method, applications of FEM, approach to modeling of manufacturing processes (Welding,Casting,Forming,etc.),Major causes of errors	2	2	Numerical Modeling and simulation	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسه الخوارزمي	8

product data exchange standards and virtual manufacturing, variable selection in regression analysis, criteria of regression models selection, Cross-validation, hypothesis testing and prediction regression modeling, introduction to neural networks, neural network modeling, assembly line analysis, Group technology, cellular and flexible manufacturing , modeling and simulation of FMS and CIMS, just in time manufacturing ,lean production/enterprise and agile manufacturing, synchronous manufacturing and the theory of constraints, information systems and e-manufacturing.	2	2	Computer integrated and flexible Manufacturing systems	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	9
	2	2	Technical English Language 2	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	10
introduction to intelligent inspection methods, computer vision and image processing, multiple line-scan camera web inspection systems, high speed color grading,discoloration detection systems, multiple area-scan camera vision systems for non-contact gauging, defect analysis and identification, volume and surface area measurements, Near-IR imaging, moisture measurements, texture and surface measurements, tracking using linear dynamic models	2	2	Manufacturing measurements and intelligent inspection technology	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	11
production and operations management, productivity, competitiveness and strategy, decision making, total quality management, product and service design, reliability, process selection and capacity planning, linear programming, facilities layout, design of work systems, learning curves, location planning , transportation model, project management	2	2	manufacturing systems and quality management	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	12
introduction to information technology, computer systems, database systems, product data systems, process and facilities planning systems,production planning systems,enterprise resource planning (ERP) systems, manufacturing execution systems (MES), warehouse management systems (WMS), supervisory control and data acquisition (SCADA) systems, Automation systems, systems integration.	2	2	Manufacturing information and Data Systems	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	13

Introduction to physical properties of materials,properties and structures of composite materials,ceramic materials, processing of ceramics,molding and chemical bonding, (plastics,Polymerization)and both strength, Bonding position on near-polymerization mechanisms,high temperature materials,advanced coatings,industrial applications of composites and ceramics,friction materials, microelectronics and MEMS materials,Materials in energy systems.	2	2	Advanced engineering materials	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	14
	2	2	Technical English Language 2	الثاني	الدراسات العليا (الماجستير)	التصنيع المؤتمت	الهندسة الخوارزمي	15
Review of (linear algebra,application networks, structures and estimation),lagrange multiplier,laplace equation, boundary value problem,Minimum principles and calculus of variations,fourier transform,convolution, vector differential calculus,legendre polynomials,Bessel equation and Bessel function, stochastic process, spectral analysis,Markov chains, centrallimit theorem, Dynamical system,linear and non-linear systems,phase space dynamics,fixed points, limit cycles and attractors.	2	2	Advanced Mathematics	الاول	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسة الخوارزمي	16
Ultrasonic machining,abrasive flow machining, water jet cutting,Electro-chemical machining,electrical discharge machining,plasma arc machinig,laser applications in manufacturing processes,rapid prototyping,surface properties of non-traditional processed materials.	2	2	Advanced Manufactueing Processes	الاول	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسة الخوارزمي	17
Principles of industrial automation systems, system approach for automated machinery and plants. Advanced topics in pneumatic and hydraulic components and systems, Design of pneumatic and hydraulic systems. Principles of industrial robots and their role in industrial automation, Mobile robots, Robot arms, AS/RS. Design issues in industrial automation and robotics technology. Case studies, Term project.	2	2	Industrial Automation& Robotics Technology	الاول	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسة الخوارزمي	18

Analytical and Numerical methods for solution of typical vibratory and balancing problems encountered in engines and other mechanical systems. General theory of free, forced, and transient vibrations; vibration transmission, isolation, and measurement; normal modes and generalized coordinates; method of matrix equation formulation and solution. Response of single degree of freedom systems to periodic and non-periodic excitation. Lagrange equation. Proportionally and non-proportionally damped multidegree of freedom systems. Numerical methods; Rayleigh-Ritz method and transfer matrix methods.	2	2	Advanced Engineering Vibration	الاول	الدراسات العليا (الماجستير)	الميكاترونكس	الهندسة الخوارزمي	19
Review of classical control techniques : performance specifications, root locus analysis and design, frequency response analysis and design. Modern control techniques : state space feedback analysis , canonical forms , controllability, observability. Controller design. Observer design	2	2	Advanced Control Systems	الاول	الدراسات العليا (الماجستير)	التصنيع الوئمت	الهندسة الخوارزمي	20
	2	2	Technical English Language 1	الاول	الدراسات العليا (الماجستير)	الميكاترونكس	الهندسة الخوارزمي	21
Historical Background, microelectromechanical systems Physical microsensors , classification of physical sensors sensor principles and examples, silicon pressure sensor technology, Chemical and biomedical sensors , electrochemical sensors , semiconductive gas-sensing microsensors , chemical and biosensor packaging, intelligent or smart sensors, Microactuators, mechanical design of microactuators, . comparison of actuation methods , microactuator examples, electromagnetic and thermal microactuating, Microfabrication, Micromachining, bulk micromachining	2	2	Microelectromechanical Systems (MEMS)	الاول	الدراسات العليا (الماجستير)	الميكاترونكس	الهندسة الخوارزمي	22
Numerical integration , Numerical methods for differential equations, Polynomial approximations of functions , Elements of the interpolation theory , Numerical Solution of Non-Linear Equation, Finite element analysis	2	2	Applied Numerical Analysis	الثاني	الدراسات العليا (الماجستير)	الميكاترونكس	الهندسة الخوارزمي	23

Discrete-time systems and T-transformation. Discrete time control systems. Stability analysis of digital control systems Root locus of digital control systems. Nyquist and Bode diagrams. Study of digital control systems using MATLAB program. . Design and compensation of digital control systems Design of control by computer systems. Different algorithms for compensation of control systems. State space description of dynamical systems. Discrete-time observation, control and feedback. Digital observers and regulator design. Digital tracking system design. Digital control of continuous-time systems. Implementation of digital controllers	2	2	Digital Control Systems Design	الثاني	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسه الخوارزمي	24
The fundamental principles of intelligent machinery. Intelligent solutions for computationally complex engineering problems. Perception methods of environment, strategies used in processing the perceptual inputs, learning from experience, reasoning techniques and search methods. Tools in intelligent systems; Petri nets, neural networks, evolutionary computing techniques (genetic methods), fuzzy logic, intuitionist fuzzy logic. Intelligent programming (prolog) and logic.	2	2	Intelligent systems and Applied Intelligence	الثاني	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسه الخوارزمي	24
Introduction to microcontroller in electronic and electromechanical systems, hardware and software design for user system interfaces, data acquisition, and control. Architecture of computer/ microcontrollers (selected architecture of a set HC-11 e.g.) memory, address decoding programming concept. interrupts. I/O interfacing (serial, parallel) , A/D,D/A operations, timer operations microcontroller architecture. Motorola HCS12 architecture, instruction set, modes of operation. Timer counter module . A/D conversion and HCS12 A/D port. pulse width modulation. serial communication. background debug mode, Fuzzy control, instruction of HCS12 for fuzzy control	2	2	Microcontrollers & Interfacing	الثاني	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسه الخوارزمي	26
Discrete-time signals and systems. Discrete Fourier transform. Sampling and reconstruction. Linear time-invariant systems. Structures for discrete-time systems. Filter design techniques. FFT methods. Fourier analysis of signals using discrete Fourier transform Digital Spectral analysis.. Digital signal processors. Advanced controller design using digital signal processors. * Design of FIR and IIR filters; DFT and its computation via FFT; applications of DFT; filter implementation; finite arithmetic effects. . Random signals. System identification techniques. Wiener and Kalman filters. DSP-based controller design and industrial diagnostic techniques.	2	2	Advanced digital signal processing	الثاني	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسه الخوارزمي	27

Introduction, mechanical components subject to dynamic loads, mechanical components subject to dynamic loads, Dynamics of rigid bodies, Plane kinetics of rigid bodies, Work and energy, Impulse and momentum, Three dimensional dynamics, Response of dynamic systems to harmonic systems, Evaluation of damping at resonance, Response to general loading system, numerical and finite element methods applied to the analysis and design of mechanical systems,	2	2	Advanced Structural Dynamics and Design of mechanical components	الثاني	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسه الخوارزمي	28
	2	2	Technical English Language 2	الثاني	الدراسات العليا (الماجستير)	الميكاترونيكس	الهندسه الخوارزمي	29

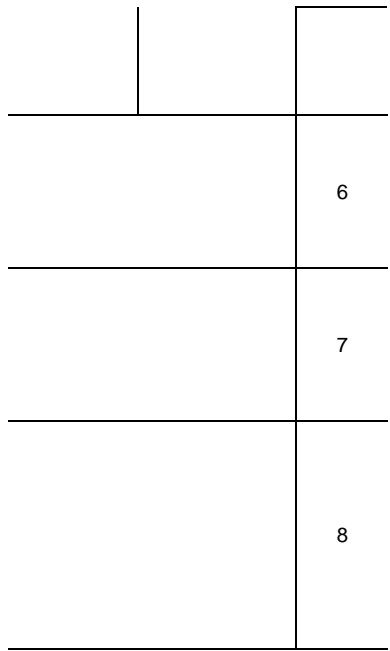
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