



# Industrial Engineering – B.S.



DANESHPAJOOHAN PISHRO HIGHER EDUCATION INSTITUTE

- **COURSE CHART**
- **SYLLABUS**
- **SEMESTER CHART**

## Industrial Engineering Undergraduate Course Chart

General Courses						
Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
61-11-004	Islamic Thoughts-I	2	2	0	-----	-----
61-11-011	Islamic Thoughts-II	2	2	0	Islamic Thoughts-I	-----
61-11-003	Rite of Life (Applied Ethics)	2	2	0	-----	-----
61-11-012	Islamic Revolution of Iran	2	2	0	-----	-----
61-11-014	Analytical History of Islam	2	2	0	-----	-----
61-15-001	Persian Language	3	3	0	-----	-----
61-15-002	English Language	3	3	0	-----	-----
61-15-005	Physical Education	1	0.5	0.5	-----	-----
61-15-011	Exercise-I	1	0	1	Physical Education	-----
61-15-007	Family and Population Knowledge	2	2	0	-----	-----
61-11-008	Introduction to Constitution	2	2	0	-----	-----
61-11-013	The Holy Quran Exegesis	2	2	0	-----	-----
<b>Total Credits</b>		22	Note1: Only one course between 'Islamic Revolution of Iran' and 'Introduction to Constitution' shall be taken.			

Science Courses						
Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111019	Mathematics-I	3	3	0	-----	-----
5111021	Mathematics-II	3	3	0	Mathematics-I	-----
5111022	Differential Equations	3	3	0	-----	Mathematics-II
5111031	Computer Programming	3	3	0	Mathematics-I	-----
5111023	Numerical Methods	2	2	0	Computer Programming	-----
5122030	Physics-I	3	3	0	-----	Mathematics-I
5122031	Physics-II	3	3	0	Physics-I	-----
5122032	Physics-I Lab	1	0	1	-----	Physics-I
5122033	Physics-II Lab	1	0	1	-----	Physics-II
<b>Total Credits</b>		25				

Industrial Engineering Courses						
Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671001	General Economics-I	2	2	0	-----	-----
1671002	General Economics-II	2	2	0	General Economics-I	-----
1671003	Accounting Principles & Cost Accounting	3	3	0	-----	-----
1671004	Project Management and Control	3	3	0	Operations Research-I	-----
1671005	Motion & Time Study	3	3	0	Production Methods	-----
1671006	Plant Layout	3	3	0	Production Methods, Industrial Drawing, Motion & Time Study	-----
1671007	Statistical Quality Control	3	3	0	Engineering Statistics	-----
1671008	Probability Theory and its Application	3	3	0	Mathematics-II	-----
1671009	Linear Algebra	3	3	0	Mathematics-I	-----
1671010	Engineering Statistics	3	3	0	Probability Theory and its Application	-----
1671011	Operations Research-I	3	3	0	Probability Theory and its Application Linear Algebra	-----
1671012	Operations Research-II	3	3	0	Operations Research-I	-----
1671013	Management Principals & Organizational Theory	2	2	0	(after passing 50 credits)	-----
1272021	Industrial Drawing	2	1	1	-----	-----
1272022	Fundamentals of Electrical Engineering	3	3	0	Physics-II	-----
1271042	Fundamentals of Electrical Engineering Lab	1	0	1	-----	Fundamentals of Electrical Engineering
1671014	Engineering Economics	3	3	0	General Economics-II	-----
1372026	Statics and Strength of Materials	3	3	0	Mathematics-I	-----
1271026	Materials Science	3	3	0	-----	-----
1671015	Production Methods	3	3	0	-----	Machine Tools Workshop I
1671016	Production and Inventory Planning and Control-I	3	3	0	Operations Research-I	-----
1671017	Production Planning	3	3	0	Production and Inventory Planning and Control-I	-----
1671018	Principles of Simulation	3	3	0	Engineering Statistics, Computer Programming	-----
1671022	Final Project	3	3	0	(after passing 100 credits)	-----
1671019	Machine Tools Workshop I	1	0	1	-----	-----
1671020	Welding Workshop	1	0	1	-----	-----
1671021	Casting Workshop	1	0	1	-----	-----
1671023	Internship	1	-	-	(after passing 100 credits)	-----
<b>Total Credits</b>		75				

Elective Courses (not complete)

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671031	Human Factors Engineering	3	3	0	Motion & Time Study	-----
1671032	Maintenance Planning	3	3	0	Probability Theory and its Application, Eng. Economics	-----
1671033	Production and Inventory Planning and Control-II	3	3	0	Production and Inventory Planning and Control-I	-----
1671034	Quality and Productivity Management	3	3	0	Statistical Quality Control	-----
1671035	Transportation Planning	3	3	0	Eng. Economics, Operations Research-I	-----
1671036	Systems Analysis	3	3	0	Differential Equations	-----
1671037	Feasibility Study	3	3	0	Probability Theory and its Application	-----
1671038	Decision Analysis	3	3	0	Probability Theory and its Application, Operations Research-I	-----
1671039	Information Management Systems	3	3	0	Computer Programming	-----
1671048	Industrial Safety & Hygiene	2	2	0	Motion & Time Study	-----
1671045	Principles of Marketing	2	2	0	(after passing 80 credits)	-----
1671046	Payroll Systems	2	2	0	Accounting Principles & Cost Accounting	-----
1671047	Financial Management	2	2	0	Accounting Principles & Cost Accounting	-----
<b>Total Credits</b>		--	Note: Students have to take up to 23 credits from the Elective courses.			

<b>Total Credits (All Courses)</b>	142
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## Mathematics-I

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111019	Mathematics-I	3	3	0	-----	-----

Consisted principally of one-variable Calculus, Functions, Derivative, Integrals, Integration Methods, Complex Numbers and Infinite Series.

## Mathematics-II

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111021	Mathematics-II	3	3	0	Mathematics-I	-----

The main scope of this course is to teach the students some topics in introductory linear algebra including matrix algebra and linear transformations and multivariable calculus including multivariable functions, directional and partial derivatives, velocity and acceleration, tangent plane and normal gradient line, cylindrical and spherical coordinates, vector field and line integrals, surface integral, Green's theorem, Divergence theorem and Stoke's theorem.

## Differential Equations

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111022	Differential Equations	3	3	0	-----	Mathematics-II

Introduction to Differential Equations; First Order Differential Equations; Second Order Linear Equations; Higher Order Linear Equations; Series Solutions of Second Order Linear Equations; The Laplace Transform; Systems of First Order Linear Equations.

## Computer Programming

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111031	Computer Programming	3	3	0	Mathematics-I	-----

Explanation of main computer parts, the concept of software and hardware, algorithms design and an introduction to a structured computer programming language.

## Numerical Methods

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111023	Numerical Methods	2	2	0	Computer Programming	-----

This course is an introduction to numerical methods for solving mathematical problems that arise in Science and Engineering. The goal is to provide a basic understanding of the derivation, analysis and use of these numerical methods. The course includes:

Error Analysis; Numerical solution of Nonlinear Equations; Interpolation, Polynomial Approximation, Curve Fitting; Numerical Differentiation and Integration; Numerical Solution of Ordinary Differential Equations; Solutions of Systems of Equations.

## Physics-I

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111030	Physics-I	3	3	0	-----	Mathematics-I

To provide tools by which students can learn how to effectively read scientific material, identify fundamental concepts, reason through scientific questions, and solve quantitative problems. Physics-I is the first course of this set. This course covers the fundamental concepts in Classical Mechanics and Thermodynamics.

## Physics-II

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111031	Physics-II	3	3	0	Physics-I	-----

The main goal of fundamental courses in physics is to provide tools by which students can learn how to effectively read scientific material, identify fundamental concepts, reason through scientific questions, and solve quantitative problems. Physics-II is the second course of this set. This course covers the fundamental concepts in Electromagnetism and includes:

Electric Charge and Electric Field; Gauss's Law; Electric Potential; Capacitance and Dielectrics; Current, Resistance, and Electromotive Force; Direct-Current Circuits; Magnetic Field and Magnetic Forces; Sources of Magnetic Field; Electromagnetic Induction; Inductance; Alternating Current; Electromagnetic Waves.

## Physics-I Lab

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111032	Physics-I Lab	1	0	1	-----	Physics-I

The main goal of this course is to introduce students to practical topics of Physics-I. Topics covered in this course:

Inclined planes experiments; Thermal conductivity of materials testing; Pendulum and spring tests; Calculating the friction of different surfaces.

## Physics-II Lab

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
5111033	Physics-II Lab	1	0	1	-----	Physics-II

Examination of various materials thermal resistance; Examination of Gauss's Law; Magnetic force testing; Electrical currents testing.

## General Economics-I

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671001	General Economics-I	2	2	0	-----	-----

Introduction to microeconomics and its effective factors based on mathematical models; Studying the interactions between the suppliers and customers.

The main goals of this course are: Institutionalizing economical insight in industrial engineers; Introducing market and its economical parameters to industrial engineers; Sensitizing industrial engineers to news about changes in economic parameters.

## General Economics-II

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671002	General Economics-II	2	2	0	General Economics-I	-----

Understanding huge economical phenomena, and the relationship between them; Introduction to Macroeconomics and its effective factors.

## Accounting Principles & Cost Accounting

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671003	Accounting Principles & Cost Accounting	3	3	0	-----	-----

Salient features of Balance Sheet and Profit and Loss statement, cash flow and Fund flow analysis (Elementary), working capital management, ratio analysis – Depreciation.

## Project Management and Control

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671004	Project Management and Control	3	3	0	Operations Research-I	-----

Introduction to engineering project management; Planning successful projects; Specifying, budgeting, implementing, executing, scheduling, delivery options, and closeout; Scheduling tasks and resources; Resource leveling; Common characteristics of projects; Network tools for project planning and monitoring; Cost optimization to meet project objectives; Project crashing, time-cost trade-offs; Risk analysis; Software for project planning and scheduling.

## Motion and Time Study

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671005	Motion & Time Study	3	3	0	Production Methods	-----

Basic procedure of motion study: job selection, recording facts, critical examination, etc; String diagram, Multiple activity chart, Travel chart; Principles of motion economy; Two-handed chart; Fundamental hand motions; Micro-motion and Memo-motion studies; Cyclegraph and Chrono-cyclegraph; Work Measurement (WM); Work sampling; Time study.

## Plant Layout

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671006	Plant Layout	3	3	0	Production Methods, Industrial Drawing, Motion & Time Study	-----

This course provides an understanding of the fundamental principles, concepts, theory and procedure for effective plant location, layout, and material handling systems design and used to design facilities.

It also covers designing the activities of people, machine, vehicles and processes within a physical environment so that the objectives of the system or enterprise (plant, hospital, bank etc.) can be satisfactorily achieved.

Cost accounting systems: Job Costing, process costing, allocation of overheads, Activity based costing, variance analysis – marginal costing – Break even analysis.

## Statistical Quality Control

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671007	Statistical Quality Control	3	3	0	Engineering Statistics	-----

Control charts for measurements ( X and R charts); Control charts for attributes (p, c and np charts); Tolerance limits; Acceptance sampling.

## Probability Theory and its Application

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671008	Probability Theory and its Application	3	3	0	Mathematics-II	-----

Definitions of probability and sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Poisson, Normal and Binomial distributions.

## Linear Algebra

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671009	Linear Algebra	3	3	0	Mathematics-I	-----

Systems of Linear Equations. Gauss-Jordan Elimination Method. Matrix Algebra. The Inverse of a Matrix. Determinants. Cramer's Rule. Vector Spaces and Subspaces. Euclidean Spaces. Linear Transformations. The Kernel and The Range of a Linear Transformation. Spanning Sets. Independent Sets. Bases. Dimension. Eigen values and Eigenvectors.

## Engineering Statistics

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671010	Engineering Statistics	3	3	0	Probability Theory and its Application	-----

Basic notions of statistics applicable to engineering problems; Moment generating functions; Random samples and sampling distributions; Parameter estimation; Hypothesis testing; Nonparametric tests; Simple and multiple regressions.

## Operations Research-I

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671011	Operations Research-I	3	3	0	Probability Theory and its Application Linear Algebra	-----

Linear programming – problem formulation, simplex method, duality and sensitivity analysis; Transportation and assignment models; Network flow models, constrained optimization and Lagrange multipliers; Simple queuing models; Dynamic programming; simulation – manufacturing applications; PERT and CPM, time-cost trade-off, resource leveling.

## Operations Research-II

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671012	Operations Research-II	3	3	0	Operations Research-I	-----

To impart knowledge on some probabilistic optimization techniques; Deterministic inventory models; Probabilistic inventory models; Queuing theory; Decision theory; Non-linear programming.

## Management Principles & Organizational Theory

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671013	Management Principals & Organizational Theory	2	2	0	(after passing 50 credits)	-----

Many management courses take a “micro” perspective – they focus on understanding individuals and small groups within organizations. In contrast, this course in organizational theory takes a “macro” perspective. Our primary focus will be understanding, diagnosing and evaluating the whole organization and its environment as a complex system that evolves over time. The course adopts a holistic approach with special emphasis on the ways organizations structure themselves to compete, adapt and survive.

## Industrial Drawing

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1272021	Industrial Drawing	2	1	1	-----	-----

Introduction to graphic language and design — means and techniques; The third and the first angle projections; Orthographic projection of points, lines, planes and solids; Principal and auxiliary views; Views in a given direction; Sectional views; Intersection of lines, planes and solids; Development of surfaces; Drafting practices; Dimensioning, fits and tolerance.

## Fundamentals of Electrical Engineering

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1272022	Fundamentals of Electrical Engineering	3	3	0	Physics-II	-----

Electric quantities and circuit elements. Kirchoff’s laws. Mesh and node analyses. Sinusoidal steady-state analysis using phasors. Network theorem and transformations. Ideal transformers. Three-phase circuits. Introduction to electrical machines. Operational amplifiers and Diodes.

## Fundamentals of Electrical Engineering Lab

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1271042	Fundamentals of Electrical Engineering Lab	1	0	1	-----	Fundamentals of Electrical Engineering



The main purpose of this course is to train the relevant works in Electronics Laboratory. Teaching Single-Phase and Three-Phase Transformers and Their Shunt Connection, Relays, Fuses, High-Voltage and Low-Voltage Cables.

## Engineering Economics

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671014	Engineering Economics	3	3	0	General Economics-II	-----

The systematic evaluation of the economic benefits and costs of projects involving engineering design and analysis. Economic decision-making in an environment of limited resources and uncertainty. Present economy, the economy of multi-year projects, selection among competing alternatives, sensitivity of outcomes to input parameters, before- and after-tax analysis, replacement economy, inflation, and estimation of future events.

## Statics and Strength of Materials

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1372026	Statics and Strength of Materials	3	3	0	Mathematics-I	-----

This course presents analytical mechanics of particles, rigid bodies and mechanical structures when the system is in static equilibrium. It also presents calculation of the deformation of various bodies under a variety of loads.

## Materials Science

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1271026	Materials Science	3	3	0	-----	-----

Relationships between properties and internal structure, atomic bonding; molecular, crystalline and amorphous structures, crystalline imperfections and mechanisms of structural change. Microstructures and their development from phase diagrams. Structures and mechanical properties of polymers and ceramics. Thermal, optical, and magnetic properties of materials.

## Production Methods

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671015	Production Methods	3	3	0	-----	Machine Tools Workshop I

- Principles and tools of measurement, hand tools and lining tools
- Metal Machinery: sawing, types of saw machines, capacity, applications, different types of saw blades; Drilling: types of drilling machines and their applications, principles of drilling, cutting speed; Turning Machines: various accessories, machine parts, cutting tools, cutting angle, cone cutting methods, bolts and their production methods; Milling Machines: types, types of gears; Series Machinery;

- Production Methods with Special Machines: NC, CNC, PLC, EDM, ECM, USM, and Spark Machines.
- Forming molten metals, casting processes, sand casting, centrifugal casting, rotational casting, coating, steel sheet and wire production methods, iron and steel permanent molding - die casting - Investment casting, permanent casting. Hot chamber and cold chamber, metal production methods, extrusion, aluminum, magnesium and copper alloys forging , bending, and rolling - pipe production methods- capsules production methods – wire extrusion – cold rolling – forming and twisting by cold rolling – metal spinning, stretch forming, drop – hammer Forming, press, cold bending – powder metallurgy, soldering, welding, plaster casting, types of plastics and plastics forming, plastics processing, elastomers, plastomers, acrylics, cellulose materials, polyethylene, polypropylene, vinyl [PVC ,PVDC), poly acetyls, poly carbonate, polyamide, (nylon),types of plastic molding, injection, reaction injection molding, blow molding, injection blow molding, pressure molding, transfer molding, thermal shaping, mechanical shaping.

## Production and Inventory Planning and Control-I

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671016	Production and Inventory Planning and Control-I	3	3	0	Operations Research-I	-----

Application of industrial engineering theory and practice to the area of operations management and production planning/control. Analysis and understanding of forecasting, aggregate planning, operations strategy, capacity planning, supply-chain management, just-in-time systems, lean manufacturing, agile manufacturing, materials requirement planning, inventory management, short-term scheduling and sequencing, line balancing and other pertinent topics.

## Production Planning

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671017	Production Planning	3	3	0	Production and Inventory Planning and Control-I	-----

Long-term and medium-term planning: Introduction, Production planning static and dynamic models; Operation planning: Workshop planning, Production line balance, Introduction to Project Planning in Production Planning.

## Principles of Simulation

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671018	Principles of Simulation	3	3	0	Engineering Statistics, Computer Programming	-----

This course covers basic principles in developing discrete event simulation models and also emphasizes how to analyze and interpret the results of computer simulation experiments.

## Final Project

Course Code	Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671022	1671018	Final Project	3	3	0	(after passing 100 credits)	-----

Teaching students how to do researches, gather information, and categorize data and present results based on data.

## Machine Tools Workshop I

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671019	Universal Machine Tools Workshop I	1	0	1	-----	-----

The main goal of this course is to introduce students to various machinery processes, including: Lathing, Milling, Drilling and ...

## Welding Workshop

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671020	Welding Workshop	1	0	1	-----	-----

Introduction to Manual Arc Welding, TIG, MAG, MIG, and Technology of welding, Heat sources for welding and cutting, Heating effects before and after welding, Welding cracks, Effects of alloys on welded structures, Mechanical properties of welded structures.

## Casting Workshop

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671021	Casting Workshop	1	0	1	-----	-----

The aim of this course is to introduce casting tools and equipment and their importance to students. In addition, they will learn how to make various types of models and become familiar with their applications.

## Internship

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671023	Internship	1	-	-	(after passing 100 credits)	-----

Practical introduction of studied courses through the university, in entirely industrial environments.

## Human Factors Engineering

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671031	Human Factors Engineering	3	3	0	Motion & Time Study	-----

Introduction to human factors engineering; Muscular work; Nervous control; Work efficiency; Body size and anthropometrics; Work station design; Heavy work; Handling

loads; Man-machine systems; Mental activity; Fatigue; Stress and boredom; Vision and lighting; Noise and vibration.

## Feasibility Study

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671037	Feasibility Study	3	3	0	Probability Theory and its Application	-----

Introduction to feasibility studies: project identification, product mix and scope. Marketing feasibility: present and future market study, demand, pricing, and revenue. Technical feasibility: site selection, material, labor, equipment, knowhow, and shipping. Financial feasibility: project financing, production cost, break-even analysis, profitability analysis. Organizational and administrative feasibility: Organizational structure, governmental regulations, safety and environmental standards, patents and human relations. Reporting and presentation. Case studies.

## Decision Analysis

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671038	Decision Analysis	3	3	0	Probability Theory and its Application, Operations Research-I	-----

Principles of decision making under uncertainty; Decision models: influence diagram and decision tree; Solution and analysis of decision problems; Value of information; Attitudes towards risk; Utility theory; Multi-attribute decision problems.

## Principles of Marketing

Course Code	Course Title	Credits	Theoretical	Practical	Pre-requisite	Simultaneous
1671045	Principles of Marketing	2	2	0	(after passing 80 credits)	-----

To enable students to deal with newer concepts of marketing concepts like strategic marketing segmentation, pricing, advertisement and strategic formulation. Topics covered in this course:

Introduction; Marketing Planning and Strategy Formulation; Buying Behavior and Market Segmentation; Product Pricing and Marketing Research; Advertising, Sales Promotion & Distribution.

Total	Guide				Course title		Industrial Engineering-B.S. Semester Chart										Semester
	IE Industrial Engineering		G General Course														
	S Science		E Elective Course		Credits	Course type according to the guide											
18	Physical Education		Persian Language		English Language		Industrial Drawing		Physics Lab-I		General Economics-I		Physics-I		Mathematics-I		1
	1	G	3	G	3	G	2	IE	1	S	2	IE	3	S	3	S	
18	Universal Machine Tools Workshop		The Holy Quran Exegesis		Statics and Strength of Materials		Physics Lab-II		General Economics-II		Computer Programming		Physics-II		Mathematics-II		2
	1	W	2	G	3	IE	1	S	2	IE	3	S	3	S	3	S	
18	Family and Population Knowledge				Islamic Thoughts-I		Materials Science		Production Methods		Numerical Methods		Linear Algebra		Probability Theory and its Application		3
	2		G		2	G	3	IE	3	IE	2	IE	3	IE	3	IE	
18	Rite of Life (Applied Ethics)				Fundamentals of Electrical Engineering Lab		Fundamentals of Electrical Engineering		Motion & Time Study		Engineering Statistics		Operations Research-I		Differential Equations		4
	2		G		1	IE	3	IE	3	IE	3	IE	3	IE	3	IE	
18	Analytical History of Islam				Engineering Economics		Casting Workshop		Statistical Quality Control		Project Management and Control		Production and Inventory Planning and Control-I		Operations Research-II		5
	2		G		3	IE	1	IE	3	IE	3	IE	3	IE	3	IE	
17	Internship		Exercise-I		Welding Workshop		Production Planning		Elective Course		Management Principals & Organizational Theory		Plant Layout		Accounting Principles & Cost Accounting		6
	1	T	1	G	1	W	3	IE	3	E	2	IE	3	IE	3	IE	
18	Islamic Thoughts-II				Islamic Revolution of Iran/ Introduction to the Constitution		Elective Course		Elective Course		Final Project		Principles of Simulation		Elective Course		7
	2		G		2	G	2	E	3	E	3	IE	3	IE	3	E	
17					Elective Course		Elective Course		Elective Course		Elective Course		Elective Course		Elective Course		8
					2	E	3	E	3	E	3	E	3	E	3	E	

**Elective Courses:**

Feasibility Study (3)- Human Factors Engineering (3)- Maintenance Planning (3)- Production and Inventory Planning and Control II (3)- Quality and Productivity Management (3)- Transportation Planning (3)- Systems Analysis (3)- Decision Analysis (3)- Information Management System (3)- Industrial Safety & Hygiene (2)- Principles of Marketing (2)- Payroll Systems (3)- Financial Management (2)