PERIYAR UNIVERSITY
SALEM 638 011

PERIYAR INSTITUTE OF DISTANCE EDUCATIONS (PRIDE)
P.G. DIPLOMA IN COMPUTER AIDED DESIGN
ONE YEAR PROGRAMME
NON SEMESTER
REGULATIONS AND SYLLABUS
(Effective from the Academic year 2007-2008 and thereafter)
PERIYAR UNIVERSITY, SALEM - 11
PERIYAR INSTITUTE OF DISTANCE EDUCATIONS
PRIDE
PG DIPLOMA IN COMPUTER AIDED DESIGN
(PGDCAD)
ONE YEAR PROGRAMME

Regulations

Effective from the Academic year 2007 – 2008 and thereafter

1. CONDITION FOR ADMISSION

The candidate who has passed B.Sc. Computer Science, B.C.A., B.Sc. Information Science, and B.Sc. Information Technology of this University or any degree with diploma in CAD/CAM/CA or any other University accepted by the syndicate as equivalent thereto subject to such conditions as may be prescribed therefore shall be permitted to appear and qualify for the P.G. Diploma in CAD degree Examination of this University after a course of one academic year.

2. DURATION OF THE COURSE

The course for the P.G. Diploma in COMPUTER AIDED DESIGN shall consist of one Academic year.
3. COURSE OF STUDY

The Course of Study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time.

1. MACHINE DRAWING  
2. MACHINE SHOP TECHNOLOGY  
3. ROBOTICS  
4. ENTREPRENEURSHIP DEVELOPMENT  
5. COMPUTER AIDED DESIGN  
6. PRODUCT DESIGN AND DEVELOPMENT  
7. ENGINEERING DESIGN  
8. INDUSTRIAL ENGINEERING AND MANAGEMENT  
9. Practical I: AUTOCAD LABORATORY  
10. Practical II: CAD LABORATORY  
11. Practical III: GRAPHICS LABORATORY

4. EXAMINATIONS:

The examination shall be three hours duration to each paper at the end of the year. The candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination.

The external examiners should conduct the practical Examinations at the end of the year.
5. SCHEME OF EXAMINATIONS

The Scheme of Examinations for different years shall be as follows:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Paper Code</th>
<th>Title of the Paper</th>
<th>Exam Duration</th>
<th>Maximum Marks</th>
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<tbody>
<tr>
<td>1.</td>
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<td>MACHINE DRAWING</td>
<td>3</td>
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<tr>
<td>2.</td>
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<td>MACHINE SHOP TECHNOLOGY</td>
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<td>ROBOTICS</td>
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<td>ENTREPRENEURSHIP DEVELOPMENT</td>
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<td>5.</td>
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<td>COMPUTER AIDED DESIGN</td>
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<td>6.</td>
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<td>PRODUCT DESIGN AND DEVELOPMENT</td>
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<td>7.</td>
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<td>ENGINEERING DESIGN</td>
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<td>8.</td>
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<td>INDUSTRIAL ENGINEERING AND MANAGEMENT</td>
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<td>Practical I: AUTOCAD LABORATORY</td>
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<td>10.</td>
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<td>11.</td>
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<td>Practical III: GRAPHICS LABORATORY</td>
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<td>100</td>
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Total: 1100
6. QUESTION PAPER PATTERN

a. For Theory

Time: 3 Hours  
Max. Marks: 100  
Passing Min: 50

**PART – A: 5X5 = 25**

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

**PART – B: 5X15 = 75**

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

b. For Practical

Time: 3 Hours  
Max. Marks: 100  
Passing Min: 50

One / Two Compulsory Problem(s) to be solved within 3 hours.

c. Distribution of the marks

Practical:

- For Writing procedures/programs in the main answer book 40%
- For listing and debugging 40%
- For correct and formatted output 20%
7. PASSING MINIMUM

The candidate shall be declared to have passed the examinations in a Theory/practical of study only if he/she secures not less than 50% of the total prescribed marks for the subject in the University Examinations.

8. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in First Class. All other successful candidates shall be declared to have passed in Second Class. Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed the examination in First Class with Distinction provided they pass all the examinations prescribed for the course at the first appearance.

9. COMMENCEMENT OF THIS REGULATION:

These regulations shall take effect from the academic year 2007-08, i.e., for students who are admitted to the first year of the course during the academic year 2007-08 and thereafter.
1. MACHINE DRAWING

UNIT - I SECTION VIEWS:
Introductions – need for sectioning – Hatching – Inclination of hatching lines – Spacing hatching lines – Hatching of larger areas – Hatching of adjacent parts – sketch and of full section, Half sections – types, Partial or local sections, Revolved or super imposed, Removed sections and offset sections.

UNIT - II LIMITS, FITS AND TOLERANCES
Introduction – Definition of various terms used in limits – Hole basis system – Shaft basis system –Types of fits – Selection of fits and applications – types of tolerances – form and position – Indication of tolerances and fits on the drawing.

UNIT – III KEYS AND SURFACE FINISH

UNIT - IV SCREW THREADS AND THREADED FASTENERS

Text Books

Reference Book
2. MACHINE SHOP TECHNOLOGY

UNIT-I:
Planer: Types of planers-description of double housing planer-specifications-principles of operation-drives-quick return mechanism-feed mechanism-types, work holding devices and special fixtures-types of tools-various operation.
Shaper: Types of shapes-specifications-standard/plain-universal-principles of operation drives- quick return mechanism-crank and slotted link-feed mechanism-work holding devices-tools and fixtures.
Slotter: Types of slotters-specifications-method of operation-Whitworth quick return mechanism-feed mechanism-work holding devices-types of tools.

UNIT -II:

UNIT-III:
Grinding machines: Types and classification-specifications-rough grinders-floor mounted hand grinders-portable grinders-belt grinders-precision grinders-cylindrical, surface, centre less grinders-internal grinders-planetary grinders-principles of operations-grinding wheels abrasives-natural and artificial-dressing and truing of wheels-
Broaching: Types of broaching machine-horizontal vertical and continuous broaching-principles of operation-types of broaches-classification-broach tool nomenclature-broaching operations-simple examples.
Boring and Jig boring: Boring machines-horizontal and vertical types-fine boring machines-boring tools-jig boring machine-measuring system-hole location procedure-deep hole boring.
UNIT-IV:
**Gear manufacturing practice-Forming and Generating processes:**

UNIT-V:
**Jigs and Fixtures:**Definitions and concept of Jig and fixture-Advantages of jigs and fixtures-elements of jigs and fixtures-locating devices-'V' locators-fixed stop locators-adjustable stop locators-clamping devices-strap clamp, screw clamp-cam action clamp-types of jigs-box drill jig-indexing drill jig types of fixtures-keyway milling fixture-string milling fixture.


**Non-Conventional Machining process:**Ultrasonic machining-chemical machining-electro chemical grinding-electrical discharge machining-plasma arc machining-laser machining.

**Text book:**
1. Elements of Workshop Technology-I& II-Hajra Choudry & Battacharya

**REFERENCE BOOKS:**
1. Production Technology-HMT
2. Production Tech- Jain & Gupta
4. Production processes TTTI, Chennai
3. ROBOTICS

UNIT - I:

UNIT - II:

UNIT - III:

UNIT - IV:

UNIT - V:

REFERENCE BOOKS:
4. ENTREPRENEURSHIP DEVELOPMENT

UNIT-I:

UNIT-II:

UNIT-III:

UNIT-IV:
Marketing channel – selecting channel members – setting quality standards – requirements strategies. Types of relevant institutions – entrepreneurship development programme in India - prospects.

UNIT-V:

REFERENCE BOOKS
5. COMPUTER AIDED DESIGN

UNIT – I

UNIT – II

UNIT – III
Modelling Techniques – 3D Modelling – Geometric modeling Techniques and functions.

UNIT-IV

UNIT-V

TEXT BOOK:

REFERENCES:
6. PRODUCT DESIGN AND DEVELOPMENT

UNIT-I: CREATIVE THINKING AND PRODUCT INNOVATION
The product and process design function. Locating ideas for new products. Selecting the product. Qualifications of the production design engineer, Creative thinking curiosity and imagination.

UNIT-II: CRITERIA FOR PRODUCT SUCCESS
Areas to be studied preparatory to design market research functional design. The value of appearance - Principles and laws of appearance - Incorporating quality and reliability into the design. Man Machine considerations-Designing for ease of maintenance.

UNIT-III: COST AND PRODUCT DEVELOPMENT

UNIT-IV: PATENTS
Classes of exclusive rights - Patents-Combination versus aggregation - Novelty and Utility - Design patents - patent disclosure - patent application steps - Patent office prosecution - Sales of patent rights - Trade marks - Copy rights.

UNIT-V: QUALITY CONTROL AND RELIABILITY
Quality Control procedure - Inspection and test equipment - Statistical quality control - Manufacturing Reliability - Probability of tool reliability - Reliability operations - Developing a quality-control and reliability programme.

REFERENCES:
7. ENGINEERING DESIGN

UNIT – I:
Importance of product design – design process – organization for design – design to codes and standards – product and process cycles – societal considerations. Identifying the customer needs – benchmarking – product design specification

UNIT – II:

UNIT – III:

UNIT – IV:

UNIT – V:
Legal issues and ethical issues in design – laws, contracts, liability. Protecting intellectual property – codes of ethics. Detail design, communicating the design - writing the technical report – meeting and oral presentations.

REFERENCE BOOKS
UNIT – I: PLANT ENGINEERING AND PLANT SAFETY


UNIT – II: WORK STUDY, METHOD STUDY AND WORK MEASUREMENT


**Method Study**: Definition – Objectives – Selection of a job for method study – Basic procedure for conduct of method study – Tools used – Operation process chart, Flow process chart, two handed process chart, Man machine chart, String diagram and flow diagram.

**Work Measurement**: Definition – Basic procedure in making a time study – Employees rating factor – Application of time allowances – Rest, Personal, Process, Special and Policy allowances – Calculation of standard time – Problems – Basic concept of production study – Techniques of work measurement.

UNIT – III: PRODUCTION PLANNING AND CONTROL


UNIT – IV: PRINCIPLES OF MANAGEMENT

UNIT – V: PERSONNEL MANAGEMENT

TEXT BOOKS:
1. Industrial Engineering and Management - O. P. Khanna

REFERENCE BOOK:
9. Practical I: AUTOCAD LABORATORY

Drawing Ex. Practice (Machine & Assembly Drawing)
1. Sleeve and Cotter joint
2. Socket and spigot joint
3. GIB and Cotter joint
4. Flange Coupling
5. Universal Coupling
6. Machine Vice
7. Swivel Bearing
8. Screw jack
9. Tail Stock

10. Practical II: CAD LABORATORY

3D solid modeling and LISP programming practice
i) Geneva Mechanism
ii) Cast Iron Block
iii) Bearing Block
iv) Bushed Bearing
v) Gib and Cotter joint
vi) Screw Jack
vii) Universal Coupling
viii) Simple LISP programs for drawing the following: rectangle, circle, concentric rectangles, concentric circles, changing the colors and line types

11. Practical III: GRAPHICS LABORATORY

C Programming practice:
2. 2D Transformations
3. 3D Transformations
4. Simple Animation. (Bouncing ball, Blinking eyes etc.)
5. Clipping
6. Viewing Transformation
7. Bresenham’s Algorithm for Line drawing, Circle drawing
8. Displaying text in different fonts.