# REVISED SCHEME OF STUDIES

<table>
<thead>
<tr>
<th>CODE</th>
<th>FIRST YEAR</th>
<th>T</th>
<th>P</th>
<th>C Total(T+P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 112</td>
<td>English</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>GEN 111</td>
<td>Islamic/Pak Studies</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>PHY 143</td>
<td>Applied Physics</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MATH 113</td>
<td>Applied Math</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>PGA 104</td>
<td>Letter Press Printing</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>PGA 112</td>
<td>Screen Printing</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>PGA 124</td>
<td>Graphic Design-I</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>COMP 142</td>
<td>Computer Application</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>SHOP 122</td>
<td>Workshop Practice</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>15</td>
<td>24</td>
<td>23</td>
</tr>
</tbody>
</table>

**SECOND YEAR**

<table>
<thead>
<tr>
<th>CODE</th>
<th>FIRST YEAR</th>
<th>T</th>
<th>P</th>
<th>C Total(T+P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 211</td>
<td>Islamic /Pak Studies</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>PHY 243</td>
<td>Applied Physics</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MGM 242</td>
<td>Business Management and Accounting</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>CH 243</td>
<td>Applied Chemistry</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MATH 223</td>
<td>Applied Math</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>PGA 202</td>
<td>Offset Printing-I</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>PGA 211</td>
<td>Quality Assurance &amp; Safety Measures</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>PGA 224</td>
<td>Graphic Reproduction</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>PGA 233</td>
<td>Graphic Design-II</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>PGA 242</td>
<td>Conventional &amp; Digital Plate Making</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>16</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

**THIRD YEAR**

<table>
<thead>
<tr>
<th>CODE</th>
<th>FIRST YEAR</th>
<th>T</th>
<th>P</th>
<th>C Total(T+P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 311</td>
<td>Islamic / Pak Studies</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>MGM 322</td>
<td>Industrial Management &amp; HRD</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>CH 323</td>
<td>Applied Chemistry</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>PGA 303</td>
<td>Gravure Printing</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>PGA 314</td>
<td>Offset Printing-II</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>PGA 322</td>
<td>Flexo-Graphic Printing</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>PGA 334</td>
<td>Print Finishing &amp; Book Binding</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>PGA 342</td>
<td>Digital Design</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>PGA 351</td>
<td>Estimating for Printing</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pht 341</td>
<td>Entrepreneurship</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>15</td>
<td>24</td>
<td>23</td>
</tr>
</tbody>
</table>
اسلاميات/مطالعہ پاکستان
حصہ اول اسلاميات
ن پر 1 0 1
حصہ دوم مطالعہ پاکستان
مؤثرات ہر اسلامیات حالات
کتاب و سنت
قروان مجید
1- تورون قروان ہیر 2- نذور قروان 3- کتب و سہولیات 4- تحقیق اقسام 5- تحقیق قروان مترجم

1- لن تناولوا عرب حتى تفقوا مما تحبون
2- واعتصموا بالله جمعا ولا تفرقوا
3- ولا يجرمنكم شتان قوم على ان لا تعدلوا
4- ان الله يأمرك ان تروا الانعامات التي أهلكها
5- ان الله يأمر بالعدل والاحسان
6- ان الصلاة تنهى عن الفحشاء والمنكر
7- لقد كان لكم في رسول الله اسوة حسنة
8- ان اكركم عند الله انقادكم
9- وما أتاكم من رضوان فخذوه ومانهاكم عن فانهار
10- واعشرو هن بالمعروف
11- يمحق الله الزب وربى الصدقات
12- واصبر على ما اصابك
13- وقولوا قدلا سديدا
14- ان الدين عند الله الإسلام
سنت کی اہمیت
- 1
انعام اعمال حالات
- 1
انجام بعض لائے مکرم الاخلاق
- 2
لاومن احکام کے جب الا خیم ما جب لیکہ مسلم من مسلم موجودہ لدانہ وہدا
- 3
قل امن السلاهل ثم استیرم
- 4
خیر کم خیرم لا هل
- 5
سبع المسلم فسوق وقتلل کفر
- 6
المؤمن اخوا المومن
- 7
کل المسلم على المسلم حرام دمہ وملالہ وعرضه
- 8
آیة المنافق ثلاثة اذا حديث کذب واما اورتم خان واما وعد عد انخلا
- 9
- 10
دين اسلام
- 2
السلام کی کہا رپ کا عالمی وضاحت اور انسان کی اثرات وکلمتی زندگی جو مہما اور کل
- 11
1
تو خیر
- 2
ریت
- 3
آثر
- 4
ماگ
- 5
- 6
عید
- 2
2.1
- 2.2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45
- 46
- 47
- 48
- 49
- 50
- 51
- 52
- 53
- 54
- 55
- 56
- 57
- 58
- 59
- 60
- 61
- 62
- 63
- 64
- 65
- 66
- 67
- 68
- 69
- 70
- 71
- 72
- 73
- 74
- 75
- 76
- 77
- 78
- 79
- 80
- 81
- 82
- 83
- 84
- 85
- 86
- 87
- 88
- 89
- 90
- 91
- 92
- 93
- 94
- 95
- 96
- 97
- 98
- 99
- 100
4. دین اسلام

عموی مقتدر، و دین اسلام کے نیوادی عقائد اور عبادات کے بارے میں ان کی اور بیان کر چکے

خصوصی مصادر:

☆ قانون دین اسلام کے نیوادی اور اصطلاع کی جھنڈے بیان کر چکے
☆ اسلام کے نیوادی عقائد کی انجیہری پیشہ وہ اور بیان کر چکے
☆ اسلام کے نیوادی عقائد کے آسانی کی اخلاقی اور انقلابی زندگی پیشہ وہ اور بیان کر چکے
☆ عبادات کے لئے اور اصطلاع کی جھنڈے بیان کر چکے
☆ عبادات کے لئے اور اصطلاع کی جھنڈے بیان کر چکے
☆ عبادات (خداودو روہو، جہاں، جوکا) کے لئے احکامات اور انسانی زندگی پر اثرات بیان کر چکے

اسلامی عبادات اور عبادات کے سالانہ اور انقلابی زندگی میں اثرات کا انسانی ایجاد کر چکے
اصابات اطلاعات

حمله اطلاعات

Gen III

نکات مطالب پاکستان

ادعاءات کی اجرای واقعیت

اطلاعیات کا معیار (قانونی عمل کا کتب)

مبنی پروپوزال اطلاعیاتی وضاحت

واحد ورک

قانونی

تحریم

ریاست گل

اختلال

عصبیت
d

واضح کی کب

علیق

اعتراف

منبتی
نصاب اطلاعات سال اول

تدریجی مقام

عوام مقیم اطلاعات کے سلسلے میں کہا گیا ہے اس کے

خصوصی مقام

- مجموعے کا مطلب یہ ہے کہ
- کسی غیر کے سالوں کی تصدیق کی کر کے
- اپنی شخصیوں اور معاشرے پر مجموعے کے خصوصی اثرات پیدا کرنا یہ کہ طرف ریکاردن کے
- دیوان داری کے تحت یہ ہے کہ
- وقائی اور معاشرتی اثرات پیدا کرکے
- نظام وضاحتی افادات کی پیدا کرگے
- خصوصی وضاحتی افادات کی پیدا کرکے
- صرف لوگ کی ضرورت کی سمجھ کرکے
- خصوصی وضاحتی افادات کی پیدا کرکے
- وقت کی پابندی کے ہاتھ آتے ہے
مطالعہ پاکستان

خطوں کی معاصر ضرورت ہے ۔ پاکستان کی ترقی کے لیے ضروری ہے کہ آزادی کے بعد پاکستان میں آزادی کا کام کیا جائے۔

خصوصی متاصر:
- ہزاروں کے مہم میں میں پاکستان کے
- آزادی کے بعد آزادی کے
- خصوصی فوج میں آزادی کے اہمیت کے لیے
- ذاکرہے کہ تشدد پر مبنی معاشرت میں
- جسی بھی قانون کے نزدیک پر مبنی معاشرت کے

نظریہ پاکستان

عوام معاصر:
- نظریہ پاکستان (اری اسلام) سے پہلی تحریج واقع موجبہا

خصوصی متاصر:
- نظریہ پاکستان کے لیے کارکردگی کو طالبہ کر کے
- نظریہ پاکستان کے لیے کارکردگی کو طالبہ کر کے
- علامت میں اور اقوام کو اظم کے فردوں کی روشنی میں نظریہ پاکستان کے
- نظریہ پاکستان کا کارکردگی نہ کہ

عوام معاصر:
- نظریہ پاکستان کے لیے کارکردگی کو طالبہ کر کے

خصوصی متاصر:
- تمہارہ تام کے بارے میں

Gen III
نصب مسجد
ضرور مطالعہ پاکستان
مطابق
حریت قدر
مسلمان ہم سن آزادی کے خاطر مسجد بنائے ہوں گئے ہے۔ مسجد کی تعمیر کی ادائیگی اور ضرورت۔ یہ رہنما ہے کہ غم کے نقصانات
تفریح کا پاکستان
قسم پاکستان کی اجتماعی عوام (ومن اسلام) قیام پاکستان کی غمزدگی ہے۔ نظریہ پاکستان کی دعوت نظریہ پاکستان
علما و اقوام اور کا انرک ہے کہ اstrasیات کی روشنی
نظریہ پاکستان کی تاریخ ہے۔

جب ہم نے قسم کیا کہ مسجد بنایا اور شاہد کی اخلاقی قیمت خراب ہے، ہمیشہ شاہد کی کرکے کھڑے ہیں

تفریح قدر

وہنوں ترمیم کے بعد مسجد پر قومی چیہ پر کے

مہم ترمیم کے بعد مسجد پر درج کے آئے جائے کے

وہنوں ترمیم کے بعد مسجد پر اصغر سے پہلے

مسجد کے ائمہ مسجد کی اخلاقی قیمت خراب ہے

مسجد کے ائمہ مسجد کی اخلاقی قیمت خراب ہے

مسلمانوں میں چھاپ ایکی کی راہ سے ہی انسان کا

مسلمانوں میں چھاپ ایکی کی راہ سے ہی انسان کا

آزادی کے بعد مسجد میں تحفے کی خاصیت ہیں۔
Eng-112

Total Contact Hours

<table>
<thead>
<tr>
<th>Theory</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

AIMS.
At the end of the course, the students will be equipped with cognitive skill to enable them to present facts in a systematic and logical manner to meet the language demands of dynamic field of commerce and industry for functional day-to-day use and will inculcate skills of reading, writing and comprehension.

Detail of Contents:

**PAPER-A**

1. **prose/text**
   - 16 hours
   - 1.1 First eight essays of Intermediate English Book-II

2. **close test**
   - 4 hours
   - 2.1 A passage comprising 50-100 words will be selected from the text. Every 11th word or any word for that matter will be omitted. The number of missing word will range between 5-10. The chosen word may or may not be the one used in the text, but it should be an appropriate word.

**PAPER-B**

3. **Grammar**
   - 26 hours
   - 3.1 Sentence Structure.
   - 3.2 Tenses.
   - 3.3 Parts of speech.
   - 3.4 Punctuation.
   - 3.5 Change of Narration.
   - 3.6 One word for several
   - 3.7 Words often confused

4. **Composition**
   - 12 hours
   - 4.1 Letters/Messages
   - 4.2 Job application letter
   - 4.3 For character certificate/for grant of scholarship
   - 4.4 Telegrams, Cablegrams and Radiograms, Telexes, Facsimiles
   - 4.5 Essay writing
   - 4.6 Technical Education, Science and Our life, Computers, Environmental Pollution, Duties of a Student.

5. **Translation**
   - 6 hours
   - 5.1 Translation from Urdu into English.
   - For Foreign Students: A paragraph or a dialogue.

**Recommended Textbooks:**

1. Technical English developed by Mr. Zia Sarwar, Mr. Habib-ur –Rehman, Evaluated by Mr.Zafar Iqbal Khokhar, Mr. ZahidZahoor, Vol - I, National Book Foundation
Eng-112

ENGLISH

Instructional Objectives:

PAPER-A

1. Demonstrate better reading, comprehension and vocabulary
   1.1 Manipulate, skimming and scanning of the text.
   1.2 Identify new ideas.
   1.3 Reproduce facts, characters in own words
   1.4 Write summary of stories

2. Understand facts of the text
   2.1 Rewrite words to fill in the blanks recalling the text.
   2.2 Use own words to fill in the blanks.

PAPER-B

3. Apply the rules of grammar in writing and speaking
   3.1 Use rules of grammar to construct meaningful sentences containing a subject and a predicate.
   3.2 State classification of time, i.e. present, past and future and use verb tense correctly in different forms to denote relevant time.
   3.3 Identify function words and content words.
   3.4 Use marks of punctuation to make sense clear.
   3.5 Relate what a person says in direct and indirect forms.
   3.6 Compose his writings.
   3.7 Distinguish between confusing words.

4. Apply the concepts of composition writing to practical situations
   4.1 Use concept to construct applications for employment, for character certificate, for grant of scholarship.
   4.2 Define and write telegrams, cablegrams and radiograms, telexes, facsimiles
   4.3 Describe steps of a good composition writing.
   4.4 Describe features of a good composition.
   4.5 Describe methods of composition writing
   4.6 Use these concepts to organize facts and describe them systematically in practical situation.

5. Applies rules of translation
   5.1 Describe confusion.
   5.2 Describe rules of translation.
   5.3 Use rules of translation from Urdu to English in simple paragraph and sentences.
APPLIED PHYSICS - I

Code: PHY 143

Total Contact Hours:
Theory: 64
Practicals: 96

Pre-Requisite:
Knowledge of Physics at Secondary School level is essential.

Objectives:
Understand the fundamental underlying important industrial processes.
Offer scientific solution to technological problems.
Acquaint the students with the latest industrial development based upon Applied Physics.

COURSE CONTENTS

1. ORIENTATION
   1.1 Importance of Applied Physics to technologists.
   1.2 Physical quantities and their measurement.
   1.3 Use of Vernier Callipers.
   1.4 Use of Micrometer Screw Gauge.

2. REPRESENTATION OF FORCE
   2.1 Scalar and Vector quantities.
   2.2 Graphical representation of force.
   2.3 Composition and resolution of forces.
   2.4 Graphical and analytical methods for finding resultant of a number of forces.

3. FRICTION
   3.1 Introduction to friction.
   3.2 Static and sliding friction.
   3.3 Co-efficient of friction.
   3.4 Laws of friction.
   3.5 Methods used to reduce friction.

4. WORK, ENERGY AND POWER
   4.1 Work and its units.
   4.2 Energy and its kinds.
   4.3 Calculation of potential and kinetic energies.
   4.4 Law of conservation of energy.
   4.5 Power and its units.
5. HYDROSTATICS
   5.1 Hydrostatics.
   5.2 Buoyancy.
   5.3 Archimedes' principle.
   5.4 Pascal's Law.

6. HYDROMETRY
   6.1 Density and specific gravity.
   6.2 Measurement of relative density.
   6.3 Brougham press.

7. HEAT
   7.1 Heat and temperature.
   7.2 Construction of mercury thermometer.
   7.3 Scales used for temperature measurements.
   7.4 Humidity and relative humidity.
   7.5 Effects of humidity on paper, ink and metals used in printing.
   7.6 Wet and dry bulb hygrometer.
   7.7 Dew point and dew point hygrometer.
   7.8 Control of humidity.

8. LIGHT
   8.1 Nature of light.
   8.2 Rectilinear propagation of light.
   8.3 Shadow formation.
   8.4 Pin-hole camera.
   8.5 Reflection of light.
   8.6 Refraction of light.

9. SPHERICAL MIRRORS AND LENSES
   9.1 Types of spherical mirrors.
   9.2 Graphical construction of images by spherical mirrors.
   9.3 Lenses and their classification.
   9.4 Graphical construction of images by lenses.
   9.5 Lens formula and sign conventions.
   9.6 Lens defects.
   9.7 Compound microscope.

6 HOURS
6 HOURS
8 HOURS
8 HOURS
8 HOURS
PRACTICALS

1. Measure the diameter and length of a solid cylinder using vernier calliper.
2. Measure the diameter of a wire by using a screw guage.
4. Find specific gravity of a liquid using specific gravity bottle and hydrometer.
5. Verify Archimedes principle.
6. Determine relative humidity using hygrometer.
8. Verify the laws of reflection of light.
10. Find the focal length of a concave mirror by parallax method.
11. Find focal length of a convex lens by parallax method.
12. Study the working of pin-hole camera.
13. Find the co-efficient of friction of two surfaces.
14. Solve problems by graphical construction of images formed by lenses.

Books Recommended:
INSTRUCTIONAL OBJECTIVES

1. UNDERSTAND THE FUNDAMENTAL UNITS OF MEASUREMENT OF PHYSICAL QUANTITIES IN M.K.S. SYSTEM AND S.I. UNITS AND APPLY PRECISION INSTRUMENTS IN PRINTING TECHNOLOGY
   1.1 Describe importance of scientific knowledge for technician.
   1.2 Convert one system of units into the others.
   1.3 Describe vernier caliper.
   1.4 Describe Micrometer screw gauge.

2. UNDERSTAND THE CONCEPT OF VECTORS TO SOLVE PROBLEMS INVOLVING COMPOSITION AND RESOLUTION OF FORCES
   2.1 Define scalar and vector quantities.
   2.2 State method of representing force.
   2.3 Solve problems on addition of vectors.
   2.4 Explain the concept of composition and resolution of force for solving numerical examples.

3. UNDERSTAND THE MEANING OF FRICTION AND ITS IMPLICATION IN TECHNOLOGY
   3.1 Define friction.
   3.2 Define static friction and sliding friction.
   3.3 Define angle of friction and coefficient of friction.
   3.4 State the laws of friction.
   3.5 Describe methods used to reduce friction.

4. UNDERSTAND CONCEPTS OF WORK, ENERGY AND POWER TO SOLVE DIFFERENT PROBLEMS
   4.1 Explain work and its units.
   4.2 Explain energy and its kinds.
   4.3 Derive formulas for kinetic energy and potential energy of a body.
   4.4 State law of conservation of energy.
   4.5 Explain power and its units.

5. UNDERSTAND FUNDAMENTAL TERMS AND PRINCIPLES INVOLVED IN HYDROSTATICS
   5.1 State the properties of a fluid and hydrostatic pressure.
   5.2 Explain Buoyancy.
   5.3 State Archimedes's principle and determine density of a solid using the Archimedes's principle.
   5.4 Explain Pascal's law.
UNDERSTANDING THE BASIC PRINCIPLES UNDERLYING THE HYDROMETRY AND OFFER SOLUTION TO THE PROBLEMS INVOLVED IN PRACTICAL SITUATION

6.1 Define hydrometry and distinguish between density and specific gravity.
6.2 Describe methods for the measurement of relative density of liquids.
6.3 Describe briefly Bمحا /Hydraulic press.

UNDERSTAND INSTRUMENTS FOR THE MEASUREMENT OF TEMPERATURE AND HUMIDITY

7.1 Define heat and temperature.
7.2 Explain construction and working of a mercury thermometer.
7.3 Describe different scales used for the measurement of temperature.
7.4 Define humidity and relative humidity.
7.5 Explain the effects of humidity on paper, ink and metals.
7.6 Explain the construction and working of wet and dry bulb hygrometer.
7.7 Explain the construction and working of dew point hygrometer.
7.8 Describe the methods to control humidity in a press room.

UNDERSTAND THE NATURE OF LIGHT AND ITS PROPERTIES

8.1 Explain different theories of light.
8.2 Describe experiment showing rectilinear propagation of light.
8.3 Explain the phenomena of shadow formation.
8.4 Describe principle, construction and working of a pin hole camera.
8.5 Describe phenomena of reflection of light.
8.6 Describe phenomena of refraction of light.

UNDERSTAND PROPERTIES OF SPHERICAL MIRRORS AND LENSES AND DEFECTS OF LENSES. UNDERSTAND THE WORKING OF COMPOUND MICROSCOPE

9.1 Enumerate types of spherical mirrors. Explain different properties of spherical mirrors.
9.2 Explain the graphical construction of images by spherical mirrors.
9.3 Enumerate types of lenses.
9.4 Explain the graphical construction of images by lenses.
9.5 Derive lens formula for convex and a concave mirror. Explain sign conventions.
9.6 Explain important lens defects.
9.7 Explain construction and working of a compound microscope.
MATH-113  APPLIED MATHEMATICS-I

Total Contact Hours

<table>
<thead>
<tr>
<th>Theory</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Pre-requisite: Must have completed a course of Elective Mathematics at Metric level.

AIMS.
After completing the course the students will be able to
1. Solve problems of Algebra, Trigonometry, vectors, Mensuration, Matrices and Determinants.
2. Develop skill, mathematical attitudes and logical perception in the use of mathematical instruments as required in the technological fields.
3. Acquire mathematical clarity and insight in the solution of technical problems.

Detail of Contents:

1. Quadratic equations 6 Hours
   1.1 Standard Form
   1.2 Solution
   1.3 Nature of roots
   1.4 Sum & Product of roots
   1.5 Formation
   1.6 Problems

2. Arithmetic progression and series. 3 Hours
   2.1 Sequence
   2.2 Series
   2.3 nth term
   2.4 Sum of the first n terms
   2.5 Means
   2.6 Problems

3. Geometric progression and series. 3 Hours
   3.1 nth term
   3.2 Sum of the first n terms
   3.3 Means
   3.4 Infinite Geometric progression
   3.5 Problems

4. Binomial theorem 6 Hours
   4.1 Factorials
   4.2 Binomial Expression
   4.3 Binomial Co-efficient
   4.4 Statement
   4.5 The General Term
   4.6 The Binomial Series
   4.7 Problems.

5. Partial fractions 6 Hours
5.1 Introduction
5.2 Linear Distinct Factors Case I
5.3 Linear Repeated Factors Case II
5.4 Quadratic Distinct Factors Case III
5.5 Quadratic Repeated Factors Case IV
5.6 Problems

6. Fundamentals of trigonometry 6 Hours
6.1 Angles
6.2 Quadrants
6.3 Measurements of Angles
6.4 Relation between Sexagesimal & circular system
6.5 Relation between Length of a Circular Arc & the Radian Measure of its central Angle
6.6 Problems

7. Trigonometric functions and ratios 6 Hours
7.1 Trigonometric functions of any angle
7.2 Signs of trigonometric Functions
7.3 Trigonometric Ratios of particular Angles
7.4 Fundamental Identities
7.5 Problems

8. General identities 6 Hours
8.1 The Fundamental Law
8.2 Deductions
8.3 Sum & Difference Formulae
8.4 Double Angle Identities
8.5 Half Angle Identities
8.6 Conversion of sum or difference to products
8.7 Problems

9. Solution of triangles 6 Hours
9.1 The law of Sines
9.2 The law of Cosines
9.3 Measurement of Heights & Distances
9.4 Problems

10. Mensuration of solids 30 Hours
10.1 Review of regular plane figures and Simpson's Rule
10.2 Prisms
10.3 Cylinders
10.4 Pyramids
10.5 Cones
10.6 Frusta
10.7 Spheres

11. Vectors 9 Hours
11.1 Scalars & Vectors
11.2 Addition & Subtraction
11.3 The unit Vectors i, j, k
11.4 Direction Cosines
11.5 Scaler or Dot Product
11.6 Deductions
11.7 Dot product in terms of orthogonal components
11.8 Vector or cross Product
11.9 Deductions
11.10 Analytic Expression for a x b.
11.11 Problems

12. Matrices and determinants  9 Hours
12.1 Definition of Matrix
12.2 Rows & Columns
12.3 Order of a Matrix
12.4 Algebra of Matrices
12.5 Determinants
12.6 Properties of Determinants
12.7 Solution of Linear Equations
12.8 Problems

Recommended Textbooks:

Instructional Objectives:

1. Use different methods for the solution of quadratic equations.
   1.1 Define a standard quadratic equation.
   1.2 Use methods of factorization and method of completing the square for solving the equations.
   1.3 Derive quadratic formula.
   1.4 Write expression for the discriminate.
   1.5 Explain nature of the roots of a quadratic equation.
   1.6 Calculate sum and product of the roots.
   1.7 Form a quadratic equation from the given roots.
   1.8 Solve problems involving quadratic equations.

2. Understand apply concept of arithmetic progression and series.
   2.1 Define an Arithmetic sequence and a series.
   2.2 Derive formula for the nth term of an A.P.
   2.3 Explain Arithmetic Mean between two given numbers.
   2.4 Insert n Arithmetic means between two numbers.
   2.5 Derive formulas for summation of an Arithmetic series.
   2.6 Solve problems on Arithmetic Progression and Series.

3. Understand geometric progression and series.
   3.1 Define a geometric sequence and a series.
   3.2 Derive formula for nth term of a G.P.
   3.3 Explain geometric mean between two numbers.
   3.4 Insert n geometric means between two numbers.
   3.5 Derive a formula for the summation of geometric Series.
   3.6 Deduce a formula for the summation of an infinite G.P.
   3.7 Solve problems using these formulas.

4. Expand and extract roots of a binomial.
   4.1 State binomial theorem for positive integral index.
   4.2 Explain binomial coefficients: \((n,0), (n,1),...,(n,r),..., (n,n)\)
   4.3 Derive expression for the general term.
   4.4 Calculate the specified terms.
   4.5 Expand a binomial of a given index.
   4.6 Extract the specified roots.
   4.7 Compute the approximate value to a given decimal place.
   4.8 Solve problems involving binomials.

5. Resolve a single fraction into partial fractions using different methods.
   5.1 Define a partial fraction, a proper and an improper fraction.
   5.2 Explain all the four types of partial fractions.
   5.3 Set up equivalent partial fractions for each type.
   5.4 Explain the methods for finding constants involved.
5.5 Resolve a single fraction into partial fractions.
5.6 Solve problems involving all the four types.

6. **Understand systems of measurement of angles.**
   6.1 Define angles and the related terms.
   6.2 Illustrate the generation of an angle.
   6.3 Explain sexagesimal and circular systems for the measurement of angles.
   6.4 Derive the relationship between radian and degree.
   6.5 Convert radians to degrees and vice versa.
   6.6 Derive a formula for the circular measure of a central angle.
   6.7 Use this formula for solving problems.

7. **Apply basic concepts and principles of trigonometric functions.**
   7.1 Define the basic trigonometric functions/ratios of an angle as ratios of the sides of a right triangle.
   7.2 Derive fundamental identities.
   7.3 Find trigonometric ratios of particular angles.
   7.4 Draw the graph of trigonometric functions.
   7.5 Solve problems involving trigonometric functions.

8. **Use trigonometric identities in solving technological problems.**
   8.1 List fundamental identities.
   8.2 Prove the fundamental law.
   8.3 Deduce important results.
   8.4 Derive sum and difference formulas.
   8.5 Establish half angle, double angle & triple angle formulas.
   8.6 Convert sum or difference into product & vice versa.
   8.7 Solve problems.

9. **Use concepts, properties and laws of trigonometric functions for solving triangles.**
   9.1 Define angle of elevation and angle of depression.
   9.2 Prove the law of sines and the law of cosines.
   9.3 Explain elements of a triangle.
   9.4 Solve triangles and the problems involving heights and distances.

10. **Use principles of mensuration in finding surfaces, volumes and weights of solids.**
    10.1 Define mensuration of plane and solid figures.
    10.2 List formulas for perimeters & areas of plane figure.
    10.3 Define pyramid and cone.
    10.4 Define frusta of pyramid and cone.
    10.5 Define a sphere and a shell.
    10.6 Calculate the total surface and volume of each type of solid.
    10.7 Compute weight of solids.
    10.8 Solve problems of these solids.

11. **Use the concept and principles of vectors in solving technological problems.**
    11.1 Define vector quantity.
    11.2 Explain addition and subtraction of vector.
    11.3 Illustrate unit vectors i, j, k.
    11.4 Express a vector in the component form.
    11.5 Explain magnitude, unit vector, direction cosines of a vector.
11.6 Derive analytic expression for dot product and cross product of two vectors.
11.7 Deduce conditions of perpendicularity and parallelism of two vectors.
11.8 Solve problems

12. **Use the concept of matrices & determinants in solving technological problems.**

12.1 Define a matrix and a determinant.
12.2 List types of matrices.
12.3 Define transpose, adjoint and inverse of a matrix.
12.4 State properties of determinants.
12.5 Explain basic concepts.
12.6 Explain algebra of matrices.
12.7 Solve linear equation by matrices.
12.8 Explain the solution of a determinant.
12.9 Use Cramers Rule for solving linear equations.
AIM:-
The objective of this course is to enable the students to handle and work on platen machine. The students also able to plan, design and set simple hot type composing work, prepare the line block for letterpress.

COURSE CONTENTS

<table>
<thead>
<tr>
<th></th>
<th>Principle of Letter Press Printing</th>
<th>04 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Image and non-image areas</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Principles of Letterpress printing</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Comparison of letterpress printing with other methods of printing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Brief History of Movable Type and Printing</th>
<th>03 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Movable types</td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Invention and development of printing machinery</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Invention of paper</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Precautions of Prevent Accidents and Care of Machinery</th>
<th>03 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Department / workshop layout</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Safety precautions</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Care of machinery</td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Qualities of a good machine man</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Locking up a Form</th>
<th>03 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Need of locking up</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Materials and equipment used for locking up</td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Method and sequence of locking up</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Make Ready</th>
<th>04 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Make ready and its importance</td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Steps of make ready</td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Importance of underlay, overlay and Interlay</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Atmospheric Effects on Printing Quality</th>
<th>04 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Atmospheric effects on paper</td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td>Atmospheric effects on ink</td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>Atmospheric effects on rollers</td>
<td></td>
</tr>
<tr>
<td>6.4</td>
<td>Paper seasoning and air conditioning</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Auxiliary Devices For Letter Press and Embossing</th>
<th>03 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Numbering</td>
<td></td>
</tr>
<tr>
<td>7.2</td>
<td>Perforating</td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>Cutting and creasing</td>
<td></td>
</tr>
</tbody>
</table>
7.4 Embossing

8 Introduction to Various Types of Inks Used in Letterpress 04 Hours
  8.1 Characteristics of letterpress inks
  8.2 Various types of inks
  8.3 Ingredients of inks (pigments, vehicles, soaps and driers)

9 Paper and its Types 03 Hours
  9.1 Various types of papers
  9.2 Different sizes of papers

10 Type Metals 04 Hours
  10.1 Introduction of type metals
  10.2 Properties of different type metals

11 Parts of Type Face 04 Hours
  11.1 Introduction of type face
  11.2 Introduction of beard of a type character
  11.3 Introduction of body and feet of a type character

12 Spaces, Quads and Justification 04 Hours
  12.1 Different kinds of Spaces and Quads and their uses
  12.2 Justification and its purpose

13 Introduction of Casting off 04 Hours
  13.1 Casting off and its purpose
  13.2 Methods of casting off

14 Different Parts of a Book 04 Hours
  14.1 Preliminary matter of a book
  14.2 Final matter of a book
  14.3 The text matter of a book

15 Introduction of slug Casting Machines 04 Hours
  15.1 Introduction to Linotype machine
  15.2 Introduction to semi mechanical composing machine

16 Introduction of Mono Casting Machines 04 Hours
  16.1 Introduction of Monotype Keyboard Machine
  16.2 Introduction of Monotype Composition Caster Machine

17 Making a Block 06 Hours
  17.1 Cutting, preparation and coating the plate
  17.2 Exposing and developing and burning-in the plate
  17.3 Scraping and retouching the plate and pre-etching & inking the plate
17.4 Etching and four way powdering
17.5 Washing and chalking the plate – proofing
and mounting the plate

Books Recommended
1 Printing by Letterpress, E.A.D Hutching’s C.J.E Reeve fowkes, Butter &
Tenner Ltd, London
2 Letterpress Composition and Machine work, C.AHust and F.R Lawrence.
3 Graphic Arts Fundamentals.
4 Graphic Arts Technology.
5 Mechanical Composing Part-2. The monotype key board by Alan Mortan
6 The Making of Books by Scan Jennet.
7 Mechanical Composing Part-I line composition by Alan Mortan.
8 Mechanical composing part-2 Monotype caster and Metallury by Alan Morta.
9 Letterpress Plate Making, F.G Wallis and R.V Cannon Perfamon Press Ltd
10 Photo-Engraving in Relief, W.J Smith E.L. turner and C.DHaplamml, sir
Asac Pitman and sons limited
# PRACTICALS (192 Hours)

1. Introduction to Letter Press Workshop
2. Making the layout of Letter Press workshop / Department
3. Introduction to Safety measures during work on machine
4. Cleaning and lubricating the machine
5. Demonstration of different materials and equipments used in the letter press workshop / department and their proper handling
6. Practice of locking up a block
7. Practice of locking up a simple type form
8. Making the layout of duplicate, upper and lower English type case and handling of composing stick
9. Practice of sorting the different point sizes, type faces and wrong type characters from the type case.
11. Composing proofing and making the correction in the justified text matter after and distribution of text matter
12. Visit to the Press
13. Running the platen machine and feeding practice (without printing form)
14. Dressing the platen
15. Running the platen machine and pulling of block proofs
16. Practical test
17. Mid Term Examination
18. Designing, setting / composing and proofing of a visiting card
19. Printing and distribution of composed visiting card
20. Designing, setting / composing and proofing of a simple letter form
21. Printing and distribution of a composed letter form
22. Preparation of Zinc plate, exposing, developing scraping and retouching of zinc plate
23. Pre-etching, inking, etching and four way powdering and finishing the zinc plate
24. Annual Examination
INSTRUCTIONAL OBJECTIVES

1 Understand Principle of Letter Press Printing
   1.1 Describe Image and non-image areas
   1.2 Explain principles of Letterpress printing
   1.3 Discuss comparison of letterpress printing with other methods of printing

2 Understand Brief History of Movable Type and Printing
   2.1 Explain Movable types
   2.2 Describe invention and development of printing machinery
   2.3 Describe Invention of paper

3 Understand Precautions of Prevent Accidents and Care of Machinery
   3.1 Describe Department / workshop layout
   3.2 Explain Safety precautions
   3.3 Describe care of machinery
   3.4 Explain qualities of a good machine man

4 Understand Locking up a Form
   4.1 Explain need of locking up
   4.2 Describe materials and equipment used for locking up
   4.3 Explain method and sequence of locking up

5 Understand Make Ready
   5.1 Explain make ready and its importance
   5.2 Explain steps of make ready
   5.3 Explain importance of underlay, overlay and Interlay

6 Understand Atmospheric Effects on Printing Quality
   6.1 Explain atmospheric effects on paper
   6.2 Explain atmospheric effects on ink
   6.3 Explain atmospheric effects on rollers
   6.4 Describe Paper seasoning and air conditioning

7 Understand Auxiliary Devices For Letter Press and Embossing
   7.1 Explain Numbering
   7.2 Explain Perforating
   7.3 Explain Cutting and creasing
   7.4 Explain Embossing

8 Understand Introduction to Various Types of Inks Used in Letterpress
   8.1 Explain characteristics of letterpress inks
   8.2 Describe various types of inks
8.3 Explain ingredients of inks (pigments, vehicles, soaps and driers)

9 Understand Paper and its Types
9.1 Explain various types of papers
9.2 Describe different sizes of papers

10 Understand Type Metals
10.1 Describe introduction of type metals
10.2 Explain properties of different type metals

11 Understand Parts of Type Face
11.1 Describe introduction of type face
11.2 Describe introduction of beard of a type character
11.3 Describe introduction of body and feet of a type character

12 Understand Spaces, Quads and Justification
12.1 Explain different kinds of Spaces and Quads and their uses
12.2 Explain Justification and its purpose

13 Understand Introduction of Casting off
13.1 Explain casting off and its purpose
13.2 Explain methods of casting off

14 Understand Different Parts of a Book
14.1 Explain preliminary matter of a book
14.2 Explain final matter of a book
14.3 Explain text matter of a book

15 Understand Introduction of slug Casting Machines
15.1 Describe introduction to Linotype machine
15.2 Describe introduction to semi mechanical composing machine

16 Understand Introduction of Mono Casting Machines
16.1 Describe Introduction of Monotype Keyboard Machine
16.2 Describe Introduction of Monotype Composition Caster Machine

17 Understand Making a Block
17.1 Explain Cutting, preparation and coating the plate
17.2 Explain exposing and developing and burning-in the plate
17.3 Explain Scraping and retouching the plate and pre-etching & inking the plate
17.4 Explain Etching and four way powdering
17.5 Explain Washing and chalking the plate – proofing and mounting the plate
AIM:-
This course is to enable the students to handle and work on different types of Screen Printing machines and impart knowledge to set up the screen printing workshop, safe handling of tools, chemicals and machinery.

**COURSE CONTENTS**

1 **History & Development of Screen Printing** 02 Hours
   1.1 Introduction to Screen Printing
   1.2 Old methods of Screen Printing
   1.3 New methods of Screen Printing

2 **Primary Printing Process** 02 Hours
   2.1 Letterpress / Flexography
   2.2 Offset / Lithography
   2.3 Gravure
   2.4 Screen Printing
   2.5 Difference between Screen Printing and other methods of Printing

3 **Workshop Layout and Equipment** 02 Hours
   3.1 Screen Printing frame preparation section
   3.2 Screen mounting section
   3.3 Screen degreasing and cleaning section
   3.4 Screen coating and exposing section
   3.5 Screen development sink section
   3.6 Screen finishing section
   3.7 Screen printing working and drying section
   3.8 Personal office and store room

4 **Stencil Making Techniques** 02 Hours
   4.1 Glue block out
   4.2 Tusche glue
   4.3 Paper
   4.4 Film

5 **Screen Printing Frames** 02 Hours
   5.1 Wooden frames
   5.2 Metal frames
   5.3 Qualities of screen printing frames

6 **Screen Printing Mesh** 02 Hours
   6.1 Silk
6.2 Synthetic mesh Nylon and Polyester
6.3 Metal mesh
6.4 Qualities of synthetic mesh
6.5 Mesh terminology

7 Mount the Screen Printing Frame 02 Hours
7.1 Stretching the frame
7.2 Kinds of stretchers
7.3 Stretching procedures
7.4 Tension meter

8 Photographic Stencil Making Procedure 01 Hours
8.1 Preparation of screen frame
8.2 Coating
8.3 Exposing
8.4 Development
8.5 Finishing

9 Printing Procedure 02 Hours
9.1 Setting the table or screen printing machine
9.2 Setting the registration
9.3 Proofing

10 Squeegees 02 Hours
10.1 Use of different types of squeegees
10.2 Qualities of squeegee materials
10.3 Squeegee variables
10.4 Care and maintenance of squeegee sharpness

11 Screen Printing inks classification 02 Hours
11.1 Types of screen printing inks
11.2 Inks used according to substrate

12 Inks Drying methods 01 Hours
12.1 Oxidation
12.2 Evaporation
12.3 Penetration
12.4 Polymerize
12.5 New trends

13 Screen Printing Chemicals 01 Hours
13.1 Coating and sensitizer
13.2 Butyl and Retarder
13.3 Bleach powder and liquid
13.4 Benzene
13.5 Lacquer and varnish

14 Multi Colour Screen Printing With Film Stencil 03 Hours
Methods
14.1 Preparation for multi colour stencil
14.2 Masking techniques
14.3 Registration techniques and methods
14.4 Use of registration marks and guides

15 Use of Screen Printing Process in other Areas 02 Hours
15.1 Textile and heat transfer
15.2 Circuit making
15.3 Glass etching and ceramics
15.4 Flocking and dusting
15.5 Vacuum forming

16 Troubleshooting 02 Hours
16.1 Screen making problems
16.2 Screen printing drying problems
16.3 Problems in multi colour printing
16.4 Registration problems

17 Health and Safety 01 Hours
17.1 Good housekeeping
17.2 Health hazards
17.3 Chemical hazards
17.4 Electrical safety

18 Modern trends of screen printing 01 Hours
18.1 Screen Printing Presses
18.2 Dryers
18.3 Coaters and exposing units

Book Recommended
1 Screen Printing Techniques, Albort Kosloff
   Signs of the Times Publishing Company
2 Manual of Screen Printing, Thames and Hudson
   Great Britain
3 Screen Process Printing, Robert A. Banzhof, Ed.D
   Mcknight Publishing Company BloomingtonIllinos
4 Screen Printing, J.I. Biegelisen.
5 Learn to Print Step – By – Step, Burce Robertson and David Gormley
   Mac-Donald & company
6 Screen Printing a Contemporary Approach, Samuel B. Hoff
   Delmar Publishers
# PRACTICALS (96 Hours)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to screen printing department</td>
</tr>
<tr>
<td>2</td>
<td>Screen printing workshop layout</td>
</tr>
<tr>
<td>3</td>
<td>Introduction to stencil making</td>
</tr>
<tr>
<td>4</td>
<td>Applying blockout fluid method</td>
</tr>
<tr>
<td>5</td>
<td>Tusche glue resist stencil making</td>
</tr>
<tr>
<td>6</td>
<td>Applying glue and dissolve the tusche design</td>
</tr>
<tr>
<td>7</td>
<td>Introduction to paper and card stencil method</td>
</tr>
<tr>
<td>8</td>
<td>Introduction to screen printing mesh</td>
</tr>
<tr>
<td>9</td>
<td>Fabric selection of screen printing</td>
</tr>
<tr>
<td>10</td>
<td>Mesh terminology of screen printing</td>
</tr>
<tr>
<td>11</td>
<td>Mounting method of screen printing</td>
</tr>
<tr>
<td>12</td>
<td>Use of hand stretcher, Mechanical stretcher and pneumatic stretcher, Tension meter</td>
</tr>
<tr>
<td>13</td>
<td>Prepare the single color screen printing frame with photographic method</td>
</tr>
<tr>
<td>14</td>
<td>Setting up the table and printing the screen</td>
</tr>
<tr>
<td>15</td>
<td>Printing on shape object</td>
</tr>
<tr>
<td>16</td>
<td>Use of flatbed screen printer</td>
</tr>
<tr>
<td>17</td>
<td>Use of pad printing machine</td>
</tr>
<tr>
<td>18</td>
<td>Use of round printer</td>
</tr>
<tr>
<td>19</td>
<td>Prepare the multicolour screen printing on card and other substrate</td>
</tr>
<tr>
<td>20</td>
<td>Setting up the registration and registration marks and guides</td>
</tr>
</tbody>
</table>
INSTRUCTIONAL OBJECTIVES

1 **Understand process of screen printing**
   1.1 Explain the introduction and history of Screen Printing
   1.2 Describe the old methods of Screen Printing
   1.3 Describe the new methods of Screen Printing

2 **Understand the Primary Printing Process**
   2.1 Explain the Letterpress printing process
   2.2 Define the Offset process
   2.3 Define the Gravure process
   2.4 Explain Screen Printing process

3 **Understand the Layout of Screen Printing Workshop and its Equipment**
   3.1 Explain Screen Printing frame and mounting sections
   3.2 Screen degreasing and cleaning section
   3.3 Define the coating, exposing and development sections
   3.4 Explain the finishing section

4 **Explain the Stencil Making Techniques**
   4.1 Prepare Glue block out stencil
   4.2 Explain Tusche resist and glue blockout method
   4.3 Describe the Paper stencil
   4.4 Discuss the Film stencil

5 **Understand the Screen Printing Frames**
   5.1 Describe the Wooden frames
   5.2 Describe the Metal frames
   5.3 Explain the qualities of screen printing frames materials

6 **Understand the Screen Printing Mesh**
   6.1 Enlist different types of mesh
   6.2 Explain functions of each mesh
   6.3 Discriminate different types of mesh
   6.4 State advantages and disadvantages of each mesh
   6.5 Explain the mesh terminology

7 **Understand the mounting of Screen Printing Frame**
   7.1 Describe method of stretching the frame
   7.2 Enlist kinds of stretchers
   7.3 Enlist method of stretching procedures
   7.4 Describe the tension meter

8 **Understand the Photographic Stencil Making Procedure**
   8.1 Preparation of screen frame
Preparing the screen printing coating
Explain the Exposing procedure
Explain the Development and Finishing procedure

9 Understand the Screen Printing Procedure
9.1 Describe setting the table or screen printing machine
9.2 Explain the screen printing registration methods

10 Understand the Squeegees
10.1 Explain different types of squeegees
10.2 Explain qualities of squeegee materials
10.3 Explain squeegee variables
10.4 Explain Care and maintenance of squeegee sharpness

11 Understand the Screen Printing Inks
11.1 Explain types of screen printing inks
11.2 Explain inks according to substrate

12 Explain Inks Drying methods
12.1 Explain Oxidation, Evaporation, Penetration, Polymerize

13 Understand the Screen Printing Chemicals
13.1 Describe coating and sensitizer
13.2 Describe Butyl and Retarder
13.3 Explain Benzene, Lacquer and varnish

14 Explain Multi Colour Printing
14.1 Preparation for multi colour stencil
14.2 Explain masking techniques
14.3 Describe Registration techniques and methods
14.4 Explain use of registration marks and guides

15 Understand Use of Screen Printing Process
15.1 Explain the use of screen printing in textile and heat transfer printing
15.2 Describe the circuit making techniques
15.3 Explain the glass etching and ceramics printing
15.4 Explain the flocking and dusting
15.5 Explain the vaccum forming

16 Understand the Troubleshooting
16.1 Explain the screen making problems
16.2 Explain screen printing drying problems
16.3 Explain problems in multi colour printing
16.4 Explain registration problems

17 Understand the Health and Safety
17.1 Explain good housekeeping
17.2 Explain health and chemical hazards
17.3 Elaborate electrical safety

18 Discuss Modern trends of screen printing
18.1 Discuss Screen Printing Presses, dryers, coaters and exposing units
PGA 124  GRAPHIC DESIGN-I

T   P   C
2   6   4

AIM:-
To make the students realize the importance of Design in Printing. Impact of Design, Designing of visual communication forms and other simple work independently. The students should be able to identify and choose between Fonts, Elements and Principles of Design.

COURSE CONTENTS

1  Introduction To Vector Base Software  10 Hours
   1.1 MS Word, Corel Draw
   1.2 Free Hand, In Design
   1.3 InPage

2  Introduction To Design Fundamentals  06 Hours
   2.1 Function of Man-Make Objects
   2.2 Meaning of Function and Expression
   2.3 Process of Design
   2.4 Compression between Art, Design, Illustration and Graphic Design

3  Introduction To Different Types Of Design  06 Hours
   3.1 Geometrical Shapes Design
   3.2 Floral and Ornamental Design
   3.3 Abstract and non-Objective Design

4  Introduction To Elements of Design  06 Hours
   4.1 Point, Line, Space
   4.2 Shape, Volume
   4.3 Texture, Form

5  Introduction To Principles Of Design  08 Hours
   5.1 Unity, Harmony
   5.2 Balance, Rhythm
   5.3 Perspective, Emphasis
   5.4 Orientation
   5.5 Repetition and proportion

6  Colour Theory  10 Hours
   6.1 Colour Wheel, Warm Colour, Cool Colour and Contrast Colour
   6.2 Complementary and Analogous Colours
   6.3 Tint, Tone and Shade
   6.4 Monochromatic composition
   6.5 Additive and Subtractive Method
6.6 Colour Mixing and Matching
6.7 Colour Intensity and Density

7 Optical Illusion 04 Hours
7.1 Optical Illusion in Line and in Colour
7.2 Optical Illusion with light and Texture
7.3 Silhouettes, Outline and Contour.

8 Introduction To Drawings 06 Hours
8.1 Life, Still Life, Animal
8.2 Nature Pencil Sketching

9 Introduction To Paper 04 Hours
9.1 Standard Paper Sizes and its use
9.2 Paper selection and its use
9.3 Types of Paper and Card.

10 Introduction To Design Layout 04 Hours
10.1 Thumb nails and Rough Layout
10.2 Comprehensive Layout

Book Recommended
1 What is graphic design? Quentin Nework
   Essential design Hand Book
2 The ABC’s of typography By Sandra B. Ernst
3 The complete guide & digital graphic design Thames & Hudson
4 An introduction to Art Technologies
   Reg Smith, Michael Wright, James Horton
5 Graphic design school
   The Principles and practices of graphic design
   David Dabner, Thames & Hudson
6 Packaging design, Bill Stewart
PRACTICALS (192 Hours)

2. Geometrical design. Combination of geometrical shapes. Rough sketches. Tile design (Geometrical design practice in black and white.)
4. Design in Silhouette, Outline and in Contour.
5. Design in colour (Practice of Formal and Informal Balance).
6. Design in colour (Practice of Unity and Emphasis).
9. Colour Dimension (Hue, Value, Intensity and Density).
10. Abstract composition using a dominant warm and cool colour theme / Monochromatic composition.
11. Optical Illusion Outline and solid work.
12. Free line design, study from nature (flower design) pencil and other print media.
13. Still life study from different angles. Practice of shade and form.
15. Greeting Card design.
16. Simple Design in Two or Three Colours (Prepare Comprehensive).
INSTRUCTIONAL OBJECTIVES
1 The Importance Of Vector Base Software
   1.1 Define Computer as a tool
   1.2 Explain specialty of MS Word, Corel Draw
   1.3 Explain specialty of Free Hand, In Design
   1.4 Explain specialty of In Page

2 The Importance And The Meaning Of Design
   2.1 Explain the different types of Man-made objects.
   2.2 Explain Human needs.
   2.3 Define Design.
   2.4 Explain Creation.

3 Importance And Meaning Of Elements Of Design
   3.1 Define Space and Volume.
   3.2 Explain Point Line and Space.
   3.3 Draw different types of Lines.
   3.4 Identify Point, Volume and Shape.

4 The Importance Of Principles Of Design
   4.1 Explain need of locking up
   4.2 Describe materials and equipment used for locking up
   4.3 Explain method and sequence of locking up
   4.4 Distinguish between Formal and Informal Balance.
   4.5 Explain Proportion & Emphasis
   4.6 Identify Contrast and Rhythm.
   4.7 Identify Unity

5 The Relationship And Difference Between Art, Illustration And Graphic Design
   5.1 Explain Graphic Design
   5.2 Define Art and Design.
   5.3 Define Illustration and Graphic Design.
   5.4 Explain the role of Illustration in Graphic Design.
   5.5 Explain the role of graphic design in different fields of advertisement.

6 The Importance Of Process Of Graphic Design
   6.1 Name of different steps involved in the process of Graphic Design.
   6.2 Define Formal, Technical and Material cause.

7 The Importance Of Shapes And Designs
   7.1 Define Geometrical shapes and Geometrical Designs.
   7.2 Identify different Geometrical Shapes
   7.3 Prepare Geometrical Design
   7.4 Explain and Identify Floral and Ornamental shapes
   7.5 Prepare Floral and Ornamental Design.
8 Abstract And Non-Objective Design
8.1 Define Abstract Design.
8.2 Define Non-Objective Design
8.3 State the relationship between Abstract and Non-Objective Design.

9 Dimension In Art And Design
9.1 Define and Identify Two and Three Dimensional Designs.
9.2 Explain Dimension in time as well as Dimension in Space.

10 Importance And Meaning Of Texture
10.1 Define Texture.
10.2 Explain Visual and Tactile light effect on Texture.
10.3 Enlist Natural and Man-made Texture
10.4 Explain Texture’s effect through light.
10.5 Identify different types of Texture

11 Colour Theory
11.1 Define Colour
11.2 Explain and Prepare Colour Wheel.
11.3 Identify Primary and Secondary Colour.
11.4 Explain Tertiary Colour.
11.5 Define Warm and Cool Colour
11.6 Define Complementary or Contrasting Colour
11.7 Explain Colour Dimension (Hue, Value and Intensity).
11.8 Identify the difference between Warm and Cool Colour.
11.9 Explain Colour Intensity and Density
11.10 Define Tone, Tint and Shade
11.11 Explain Monochromatic Colour.
11.12 Define Analogous Colour.

12 The Two Main Classes Of Colour Mixing
12.1 Explain Additive and Subtractive Method
12.2 Identify Additive and Subtractive Colour
12.3 Explain light and Opaque Colour

13 The Importance Of Optical Illusion In Colour
13.1 Define Optical Illusion.
13.2 Identify Optical Illusion
13.3 Draw Optical Illusion in Line.

14 The Meaning Of Silhouette, Outline And Colour
14.1 Identify Silhouette.
14.2 Define out Line and Contour.
14.3 Distinguish between Silhouette and Outline.
14.4 Prepare Silhouette, Outline and Contour

15 The Importance Of Families, Series And Font Spacing
15.1 Define families of Font.
15.2 Identify series and Font.
15.3 Define spacing in Font.
15.4 Match term related to Fonts, Font Series and Families.
15.5 Define Justification.

16 Difference Between Lettering and Typography
16.1 Explain Lettering and Typography.
16.2 Identify Lettering and Typography
16.3 Define the relationship between Lettering and Typography.

17 The Importance Of Paper In Printing
17.1 Explain Standard Paper Sizes.
17.2 Identify Different types of Paper.
17.3 Explain Selection of Paper as per requirement.

18 The Importance Of Drawing
18.1 Explain Sketching
18.2 Explain Life, Still Life and Animal Sketching

19 The Importance Of Thumbnail Sketch
19.1 Explain Thumbnail sketch.
19.2 Define Rough Sketches.
19.3 Draw Rough Sketch.

20 The importance of comprehensive layout
20.1 Define Layout.
20.2 Explain Comprehensive Layout.
COMP-142  COMPUTER APPLICATIONS

Total Contact Hours

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical</td>
<td>96</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Pre-requisite: None
AIMS: This subject will enable the student to be familiar with the fundamental concepts of Computer Science. He will also learn MS-Windows, MS-Office, and Internet to elementary level.

Detail of Contents:

1. Electronic data processing (E.D.P.)  6 Hours
   1.1 Basic Terms of Computer Science Data & its types, Information, Hardware, Software
   1.2 Computer & its types
   1.3 Block diagram of a computer system
   1.4 BIT, Byte, RAM & ROM
   1.5 Input & Output devices
   1.6 Secondary storage devices
   1.7 Types of Software
   1.8 Programming Languages
   1.9 Applications of computer in different fields
   1.10 Application in Engineering, Education & Business

2. MS-windows  2 Hours
   2.1 Introduction to Windows
   2.2 Loading & Shut down process
   2.3 Introduction to Desktop items (Creation of Icons, Shortcut, Folder & modify Taskbar)
   2.4 Desktop properties
   2.5 Use of Control Panel
   2.6 Searching a document

3. MS-office (MS-word)  8 Hours
   3.1 Introduction to MS-Office
   3.2 Introduction to MS-Word & its Screen
   3.3 Create a new document
   3.4 Editing & formatting the text
   3.5 Saving & Opening a document
   3.6 Page setup (Set the Margins & Paper)
   3.7 Spell Check & Grammar
3.8 Paragraph Alignment
3.9 Inserting Page numbers, Symbols, Text box & Picture in the document
3.10 Use the different Format menu drop down commands
   (Drop Cap, Change Case, Bullet & Numbering and Border & Shading)
3.11 Insert the 'Table and it's Editing
3.12 Printing the document
3.13 Saving a document file as PDF format

4. MS-office (MS-excel) 9 Hours
4.1 Introduction to MS-Excel & its Screen
4.2 Entering data & apply formulas in worksheet
4.3 Editing & Formatting the Cells, Row & Column
4.4 Insert Graphs in sheet
4.5 Page setup, Print Preview & Printing
4.6 Types & Categories of Charts

5. MS. Office (MS-power point) 4 Hours
5.1 Introduction to MS-Power point
5.2 Creating a presentation
5.3 Editing & formatting a text box
5.4 Adding pictures & colors to a slide
5.5 Making slide shows
5.6 Slide Transition

6. Internet & e-mail 3 Hours
6.1 Introduction to Internet & browser window
6.2 Searching, Saving and Print a page from internet
6.3 Creating, Reading & Sending E-Mail
6.4 Explain some advance features over the internet and search engines

Recommended Textbooks:
1. Bible Microsoft Office 2007 by John Walkenbach
2. Bible Microsoft Excel 2007 by John Walkenbach
3. Bible Microsoft PowerPoint 2007 by John Walkenbach
Instructional Objectives:

1. **Understand electronic data processing (E.D.P)**
   1.1. Describe Basic Terms of Computer Science, Data & its Types, Information, Hardware, Software
   1.2. Explain Computer & its types
   1.3. Explain Block diagram of a computer system
   1.4. State the terms such as BIT, Byte, RAM & ROM
   1.5. Identify Input & Output devices
   1.6. Describe Secondary Storage devices
   1.7. Explain Types of Software
   1.8. Introduction to Programming Language
   1.9. Explain Applications of computer in different fields
   1.10. Application in Engineering, Education & Business

2. **Understand Ms-windows**
   2.1. Explain Introduction to Windows
   2.2. Describe Loading & Shut down process
   2.3. Explain Introduction to Desktop items (Creation of Icons, Shortcut, Folder & modify Taskbar)
   2.4. Explain Desktop properties
   2.5. Describe Use' of Control Panel (add/remove program, time & date, mouse and create user account)
   2.6. Explain the method of searching a document

3. **Understand ms-office (MS-word)**
   3.1. Explain Introduction to MS-Office
   3.2. Describe -Introduction to MS-Word & its Screen
   3.3. Describe create a new document
   3.4. Explain Editing & formatting the text
   3.5. Describe saving & Opening a document
   3.6. Explain Page setup, (Set the Margins & Paper)
   3.7. Describe Spell Check & Grammar
   3.8. Explain Paragraph Alignment
   3.9. Explain Inserting Page numbers, Symbols, Text box & Picture in the document
   3.10. Describe Use the different Format menu drop down commands (Drop Cap, Change Case, Bullet & Numbering and Border & Shading)
   3.11. Explain Insert the Table and its Editing and modifying
   3.12. Describe printing the document
   3.13. Describe the method of file saving as a PDF Format

4. **Understand ms-office (MS-excel)**
   4.1. Explain Introduction to MS-Excel & its Screen
   4.2. Describe Entering data & apply formulas in worksheet
   4.3. Describe Editing & Formatting the, Cells, Row & Column
4.4 Explain Insert Graphs in sheet
4.5 Describe Page setup, Print preview & Printing
4.6 Explain in details formulas for sum, subtract, multiply, divide, average
4.7 Explain in details the types of charts e.g pie chart, bar chart

5. Understand ms-office (MS-power point)
5.1 Describe Introduction to MS-Power point
5.2 Explain creating a presentation
5.3 Describe Editing & formatting a text box
5.4 Explain Adding pictures & colors to a slide
5.5 Describe Making slide shows
5.6 Explain Slide Transitions

6. Understand internet &e-mail
6.1 Explain Introduction to Internet and browser window
6.2 Explain Searching, Saving and Print a page from internet
6.3 Describe Creating, Reading & Sending E-Mail and attachments
6.4 Explain some advance features over the internet and how to search topics on different search engines
List of Practical:

1. Identify keyboard, mouse, CPU, disk drives, disks, monitor, and printer and 3 Hrs

2. MS WINDOWS XP 12 Hrs
   2.1 Practice of loading and shutdown of operating system
   2.2 Creating items (icons, shortcut, folders etc) and modifying taskbar
   2.3 Changing of wallpaper, screensaver, and resolution
   2.4 Practice of control panel items (add/remove, time and date, mouse, and create user account)

3. MS OFFICE (MS-WORD) 27 Hrs
   3.1 Identifying the MS Word Screen and its menu
   3.2 Practice of create a new document, saving and re-opening it from the location and spell check & grammar
   3.3 Practice of Page Formatting (Borders, Character Spacing, Paragraph, Bullets& Numberings and Fonts)
   3.4 Practice of different tool bars like standard, format& drawing tool bars
   3.5 Practice of Insert pictures, clipart, and shapes
   3.6 Practice of header and footer
   3.7 Practice of insert table and also format of table
   3.8 Practice of page setup, set the page margins, and printing documents

4. MS OFFICE (MS-EXCEL) 27 Hrs
   4.1 Identifying the MS EXCEL Screen and its menu
   4.2 Practice of create a new sheet, saving and re-opening it from the location and spell check
   4.3 Practice of insert and delete of row and columns (format of cell)
   4.4 Practice of entering data and formulas in worksheet(Add, Subtract, Multiplying, and Divide & Average)
   4.5 Repeating practical serial number04
   4.6 Practice of insert chart and its types
   4.7 Practice of page setup, set the page margins, and printing

5. MS OFFICE (MS-POWER POINT) 15 Hrs
   5.1 Identifying the MS POWER POINT Screen and its menu
   5.2 Practice of create a new presentation and save
   5.3 Practice of open saves presentations
   5.4 Practice of inset picture and videos

6. INTERNET & E-MAIL 12 Hrs
   6.1 Identifying internet explorer
   6.2 Practice of searching data from any search engine
   6.3 Practice of create an E-Mail account and how to send and receive E-mails, download attachments
Total Contact Hours:
Theory: 32
Practical: 96
AIM:-
To make the students well-of the subjects of wood working, general metal working, welding and various cutting-machine tools and to have skill for using the tools and machines used in these fields.

COURSE CONTENTS

1  Metal Work  08 Hours
   1.1 Metal working operations
   1.2 Classification of tools
   1.3 Holding, striking and forming tools
   1.4 Metal cutting and removing tools
   1.5 Finishing, polishing and assembling tools
   1.6 Precision measuring instrument
   1.7 Use and care of files
   1.8 Screw drivers, vices, spanners, washers and clamps

2  Wood Work  08 Hours
   2.1 Hand tools
   2.2 Structure, seasoning, disease and coarse
   2.3 Wood joints
   2.4 Wood planners
   2.5 Saws and chisels
   2.6 Special wood working tools

3  Welding  08 Hours
   3.1 Tools, equipment and material of Arc and Gas welding
   3.2 Precautions
   3.3 Joints
   3.4 Soldering, brazing and welding
   3.5 Arc welding arrangements
   3.6 Welding defects and their testing

4  Machine Shop  08 Hours
   4.1 Cutting and machine tools
   4.2 Lathes
   4.3 Works performed on lathes and its cutting tools
   4.4 Taper turning
4.5 Operation of shaper and planer
4.6 Operations on grinder, drill press and slotting machine
4.7 Milling machines and their operations
4.8 Milling cutters
4.9 Indexing head
4.10 Indexing methods and calculations
PRACTICALS (96 Hours)

Metal Work
1. Measuring the thickness of M.S. Plate / Sheet with standard wire guage. Preparing the surface for laying out with the help of chalk, etc. Laying out for various plane figures like triangle, square, hexagon etc.
2. Practice of week one practical continued
3. Layout on M.S. sheet 0.5-1 mm thick for channels of sides on various angles, i.e. 45°, 60°, 90° etc. Making 5 mm thick M.S. plate with the help of saw and chisel.
4. Preparing a 40 mm side hexagon out of a 3.5 mm thick M.S. plate with the help of hack saw coarse and fine files
5. Practicing the use of vernier caliper, outside and inside micrometer for measuring thickness, depth, outside and inside diameter of cylinders and pipes
6. Preparing an outside caliper out of 3 mm M.S. plate

Wood Work
1. Making neat sketches of various hand tools with proper labeling
2. Making neat sketches of wood structure and diseases of wood with proper labeling
3. Making a fine Dowelled, Edge joint
4. Making a fine Mortise and Tenon joint
5. Make a fine Dove Tail joint
6. Making a fine Box joint

Welding
1. Making neat sketches of gas welding tools, labeling every part and function and indicating specific colors for oxygen and acetylene cylinders etc.
2. Making neat sketches of tools and complete set up of a arc welding with complete labeling
3. Making neat sketches and studying in detail:
   (a) Regulators for oxygen and acetylene gas cylinders
   (b) Gas welding torch
4. Making
   (a) Simple gas welding bead on the 5 mm MS plate
   (b) Double V gas welding butt joint on 5 mm with M.S. plate
5. Making
   (a) Simple bead on 5 mm M.S. plate with Arc welding
   (b) Double V butt joint on 5 mm plate with Arc welding
6. Making
   (a) Double bevel T joint with the help of gas welding
   (b) Square corner joint with the help of Arc welding

Machine Shop
1. Making a neat layout of a general purpose machine shop
2. Practice of:
(a) Simple facing, turning and parting off
(b) Thread cutting and knurling on a 12 mm M.S. Rod
3 Practice for taper turning on lathe machine on a 12-25 mm M. S. Rod
4 Making neat sketches of simple shapers and planner labeling their main parts
5 Practice of
   (a) Holding, injecting drill bits from the drill press and making holes in a 3 and 5 mm thick M.S. plate
   (b) Grinding of lathe cutting tools on a dummy case iron bit

Books Recommended
2 Workshop Practice Part I & II (S.I. Units), W.A.J. Chapman, Published by Edward Arnold, England.
INSTRUCTIONAL OBJECTIVES

METAL WORK
1 UNDERSTAND THE SUBJECT OF GENERAL METAL WORK, SKILL IN USING METAL WORKING TOOLS TO MAKE SIMPLE FITTINGS
   1.1 Explain the following metal working operations briefly: measuring, making, laying out, cutting, striking, holding, finishing and assembling
   1.2 Name and classify the tools used for measuring, marking and laying out briefly stating their use.
   1.3 Name the tools used for holding, striking and forming briefly stating their use.
   1.4 Name the tools used for metal cutting and metal removing (such as snips, saws, chisels, drills, taps and dies), giving their use in brief
   1.5 Name the tools used for finishing, polishing and assembly, briefly state their use.
   1.6 Explain the construction and working of the following precision measuring instruments: Vernier caliper, Inside and outside micrometer.
   1.7 State the classification and specific use of files and their care
   1.8 State the classification and specific use of holding and assembling tools like screw drivers, vices, spanners, wrenches, clamps and their use

Wood Work
2 UNDERSTAND THE SUBJECT OF WOOD WORKING AND SKILL IN WOOD WORKING HAND TOOLS AND PROFICIENCY IN MAKING SIMPLE WOOD JOINTS
   2.1 Name the wood working hand tools used for measuring, marking, laying out, holding, cutting, striking, planning and finishing
   2.2 Name different kinds of work. Explain the structure of wood and different methods of seasoning. State the effects and diseases of wood and their coarse
   2.3 Name the various wood joints and state the uses of different kinds of wood and wood joints
   2.4 Classify the wood planners. Explain the construction: uses, care and maintenance of a jack plane.
   2.5 Name the wood working saws and chisels. State their use, care and maintenance.
   2.6 Explain the following special wood working tools like ratchet braces, claw hammer, pincers and nails.

Welding
3 SUBJECT OF WELDING, SKILL IN SAFELY USING GAS AND ARC WELDING EQUIPMENTS IN BEAD RUNNING, USE OF WELDING EQUIPMENT IN SAFE AND CORRECT WAY TO MAKE NEAT WELDED JOINTS
   3.1 Name the tools, equipments and materials commonly used ion gas and arc welding giving their use in brief.
   3.2 State the general safety precautions to be observed in gas and arc
3.3 Name different types of joints made with the help of gas and arc welding practices.
3.4 Differentiate between soldering, brazing, gas welding, different types of planes, their method of making and use.
3.5 Explain the necessary preparations for the arc welding.
3.6 Explain the common welding defects, their consequences and method of testing.

Machine Shop

4 VARIOUS MACHINE TOOLS, SKILL IN USING HAND AND MACHINE TOOLS AND PROFICIENCY IN MAKING SIMPLE AND COMPLEX JOBS
4.1 Name the common machine tools of general purpose machine shop, giving their use in brief.
4.2 Sketch a simple Engine lathe, labeling its parts and other accessories.
4.3 Name the operations performed on Lathes, the tools use for them and the various angles / profiles of these tools.
4.4 Explain the method of taper turning and calculation of offset for taper turning.
4.5 Name the operations performed on shaper and planner labeling their main parts.
4.6 Name the operations performed on tool grinders, drill press and slotting machine.
4.7 Name the types of milling machine and operations performed on them.
4.8 List the various milling cutters and their uses in brief.
4.9 Explain the indexing head, its purpose and their uses of indexing practices.
4.10 Explain plain indexing methods and their calculations.
 الإسلاميةات/مطالعه پاکستان

لحظه اول

1- مولودیت

2- تاریخ و ادبیات

- خیر کم من تعلیم القرآن و علمه
- لا ایمان لعن لا امانة له ولادیان لمس عهده
- اباکرم والفنان ان الفن آکبر الحديث
- من احادیث في امرنا هذا ما ليس منه فهورد
- من عمل علینا السلاح فليس متنا
- انوا كافل الیتیم في الجنة هیکذا
- لا يوم من احد مک حتى آکرم احب الیه من والده و ولده و الناس اجمعین
- من بین لله مسجد ابنی الله له بیتایا في الجنة
- لا ضرر ولا ضرار فی الإسلام
- كلکم راع و كلکم مسئول عن رعیته

3- لؤکیم

- كی لؤکیم، ولادت، پیت، نجات
- مبی من فنیون، نواحی، بحثی، دیده، کر (اسباء ونگلا)
- خلفی دیوان

4- ضروری للعیمات

- مطعم کل سیره خاندان

5- اسلامی معاصر

- تظاهر ظاہریه، انوار کے فنوار کے اعتراف، اوین، یاسین نور، بیانا کن

6- اسلامی یافت

- ریاست آفاق، اسلامی، ریاست کا حکومت، اسلامی کمیونت کے گروپ، اسلامی ذکر
اسلامیات

قدیمی مقاصر

قرآن میں

خصوصی مقاصر

- قرآنی آیات کے تفضیلی بیان کے
- قرآنی آیات کی تسلیم کر کے
- قرآنی آیات کی مرتبہ میں یا ملکی تعلیم کے لیے بیان کے
- قرآنی آیات کی مرتبہ میں ہوائی جوہن کے لیے بیان کے
- اخلاقی نیکیتی
- عمومی میں اخلاقی یتیں سے اسلامی اخلاقی اخلاقیات (عمران اور اخلاقیات) سے آگاہ ہوئے

خصوصی مقاصر

- اخلاقیت کے تعلیم کے
- اخلاقیت کی تعلیم کے
- اخلاقیت کے رہنمہ میں اسلامی اخلاقی اخلاقیات کے
- اخلاقیت کے رہنمہ میں اسلامی اخلاقیات کے
- اخلاقیت کے رہنمہ میں اسلامی اخلاقیات کے

کرتا نظر

عمومی مقاصد نظریہ کی ہر طرح کے بارہمی میں ہاں ہے

خصوصی مقاصد

- ضرور میں پرکش ظاہر کہ ابتدائی زندگی اخلاقی پرکش کے
- ضرور میں پرکش کے بارہمی زندگی میں پرکش کے
- ضرور میں پرکش کے بارہمی زندگی میں پرکش کے
- ضرور میں پرکش کے بارہمی زندگی میں پرکش کے
- ضرور میں پرکش کے بارہمی زندگی میں پرکش کے
اسلامی معاملہ

عمومی معیار اسلامی معاملہ کے خصوصیات سے آگئی عالمی کر کے

خصوصی مقاصد

- اسلامی معاملہ جنگی، مذہبی یا مذہبی
- اسلامی معاملہ کی اہمیت
- اسلامی معاملہ کے عوامل
- اسلامی معاملہ کے عمل
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملة کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملة کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
- اسلامی معاملہ کے عمل کے عمل کے
نصاب ازلاقات (غير ضمانية كلياً)

الثاني

كل阙: 20

معلومات

معاشرتي الأقرار (ملاحظة حسابية، تمويل توقيت يهنئي) 

- تمويل توقيت
- قرار ودراست
- قرار ارادي
- حول دوائي
- ورقة الطلبي
- بدور
- استمارات
- امكان دوائي
- نقل شور
- بيان راضي
- كمال غاية
- تقيمات كاسل كراث
- خورشاي
اغلاقات

سال دم

تدریجی مقاومت

عموی مقاومت طالب علم

اغلاقات کی اہمیت و ضرورت سے آگاہ ہوکے اور بیان کرکے

خوبصورتی مقاومت طالب علم کا تخلیق کر

موجودہ کا مطلب بیان کرے-

عملی زندگی سے متعلق کی تعلیمات کے لیے

اتی تحقیق اور معاشرے کے موجودہ شدت اشاعت بڑھا کر نے کے لیے بیان کرکے

اغلاقتی اقدامات سے

تقوی درادی لگتی ہے اور اردی گلا سے جدید، سبڑ واقعی، سبزی کیلے انسان روشنی خالقیت شروع پاس آ راہ

کا لی آگئی اور اوردو تخیلی کی اہمیت بیان کرکے

اغلاقات سے منصفہ بطوراً غیرمراتم خوشبختی پرا انجام دے-

56
تصوف وریاضی

مطالعہ پاکستان

کشمیروں متعلقہ

ترکیب پاکستان

قائم پاکستان کے اسلامی جمہوریت کے بارے میں

عوامی مقصد

خاصی قدسی متعلقہ

1. قومی جلجد کے مخصوص میں کیوں دیکھے?
2. روتی میں فیصلہ کیے کہ دوہرے کے?
3. دوچار میں فیصلہ کیے کہ دیکھے?
4. بندہ سطحی سیالی میں کپڑہ کیوں دیکھے?
5. قومی تحریر کے کے کے سیالی میں کپڑہ کیوں دیکھے?
6. آزادی بندہ اور قائم پاکستان کے لیے طریقے قیام کی سیالی میں کپڑہ کیوں دیکھے?
7. قیام پاکستان کے سیالی میں اسلامی جمہوریت کے قیام کے لیے سیالی میں کپڑہ کیوں دیکھے?
8. سیالی میں قائم پاکستان کے لیے چوہندہ کپڑہ کیوں دیکھے?
APPLIED PHYSICS - II

Code: PHY 243

Total Contact Hours:
Theory: 64
Practicals: 96

Pre-Requisite:
Knowledge of Applied Physics - I is essential.

Objectives:
1. Acquaint the students with the adequate knowledge of Physics and its applications in Printing and Graphic Arts Technology.
2. Solve various problems confronting the printing and Graphic Arts Technology.

COURSE CONTENTS

1. LIGHT

1.1 Dispersion of light.
1.2 Absorption of light.
1.3 Polarization of light.
1.4 Diffraction of light.
1.5 Inverse square law.
1.6 Sources of light.
1.7 Colour temperature.

2. COLOURS AND COLOUR MEASUREMENT

2.1 Properties of colours.
2.2 Additive colour principle.
2.3 Subtractive colour principle.
2.4 Filters used in printing, filter factories.
2.5 The electromagnetic wave spectrum.
2.6 The visible spectrum.
2.7 Exposure meter.
2.8 Photometers.
2.9 Spectrometers.

8 HOURS

10 HOURS
3. DENSITOMETRY

3.1 Densitometric terms and definitions.
3.2 The relationship between density and exposure.
3.3 Density range.
3.4 Densitometers
3.5 Practical uses of densitometers.

4. STATIC ELECTRICITY

4.1 Static charges.
4.2 Coulomb's law.
4.3 Printing troubles due to static charges.
4.4 Elimination or reduction of printing troubles due to static charges.

5. CURRENT ELECTRICITY

5.1 Electricity.
5.2 Conductors and insulators.
5.3 Resistance and resistivity.
5.4 Ohm's law.
5.5 Combination of resistances.
5.6 Electrical meters.
5.7 Simple electric motor.
5.8 Simple electrical generator.

6. PHOTO EMISSION

6.1 Photo emission.
6.2 Photo cells.
6.3 Photo multipliers.
6.4 Uses of photo cells in web breaking detector in a printing machine.
6.5 Electronic engraving.

7. ELECTRONICS

7.1 Thermionic emission.
7.2 Space charge.
7.3 Vacuum tube diode.
7.4 Characteristics of a diode.
7.5 Triode tube.
7.6 Characteristics curve of a triode.
7.7 Triode as an amplifier.
SEMI CONDUCTORS

8.1 Semi conductor materials
8.2 Crystals, Donors, Acceptors and Holes.
8.3 Semi conductor diode or p-n junction
8.4 Diode as a switch
8.5 Diode as a rectifier.
8.6 p-n-p and n-p-n transistors.

8 HOURS

LASERS

9.1 Introduction.
9.2 Working.
9.3 Important industrial uses.
9.4 Laser printers.

4 HOURS
PRACTICALS

96 HOURS

1. Produce spectrums of light sources using spectrometer.
2. Compare illuminating powers of light sources using photometer.
3. Verify the principle of additive colour mixing.
5. Measure density range by using densitometer.
6. Find the filter factor of various filters.
7. Check the safety of safe light filters.
8. Detect and eliminate static electricity from papers using static eliminator.
9. Verify Ohm's law.
10. Check the even illumination of copy board.
11. Study the characteristics of diode valve.
12. Study the characteristics of a semi-conductor diode.
13. Study the characteristics of a triode valve.
14. Study the characteristics of transistors.

Books Recommended:
2. The Science of Physics, F. Pateman.
3. The Science of Physics in Lithography, Erwin-Jaffe, Lithographic Technical Foundation Inc.
4. Elementary Physics, A.B. Pal.
5. Fundamentals of Physics, Vol I., Dr. T. Hussain, Punjab Text Book Board.
7. Half Tone Photography (for offset Lithography), Erwin Jaffe.
INSTRUCTIONAL OBJECTIVES

1. UNDERSTAND CONSTRUCTION AND WORKING OF DIFFERENT LIGHT SOURCES, INTENSITY OF LIGHT AND LAW GOVERNING IT
   1.1 Explain dispersion of light.
   1.2 Explain absorption of light.
   1.3 Describe polarization of light.
   1.4 Describe diffraction of light.
   1.5 State and explain Inverse Square Law.
   1.6 Explain construction and working of tungsten filament lamp, carbon arc lamp, discharge lamp, fluorescent lamp.
   1.7 Describe colour temperation of light sources.

2. UNDERSTAND PROPERTIES OF COLOURS AND PRINCIPLES RELATING COLOUR MIXING
   2.1 Explain Hue, saturation, brightness or lightness.
   2.2 Explain additive colour mixing principle.
   2.3 Explain subtractive colour mixing principle.
   2.4 Describe types of filters used in printing technology. Explain filter factor.
   2.5 Reproduce electromagnetic wave spectrum.
   2.6 Reproduce visible spectrum.
   2.7 Describe principle, construction and working of exposure meter.
   2.8 Describe principle, construction and working of photometers.
   2.9 Explain construction and working of spectrometers.

3. UNDERSTAND THE DENSITOMETRIC TERMS AND PRACTICAL USES OF DENSITOMETERS
   3.1 Define opacity, transparency and optical density.
   3.2 Explain relation between density and exposure time.
   3.3 Describe method to measure density range.
   3.4 Explain working of densitometers.
   3.5 Describe important practical uses of densitometers.

4. ACQUIRE SUFFICIENT KNOWLEDGE OF STATIC ELECTRICITY TO OVERCOME TROUBLES PRODUCED BY THE STATIC CHARGES IN PRINTING TECHNOLOGY
   4.1 Define static charges and enlist methods of production and detection of static charges.
   4.2 State and explain Coulomb's law.
   4.3 Enumerate troubles produced in printing due to the presence of static charges.
   4.4 Describe methods of elimination of troubles in printing due to the presence of static charges.
5. UNDERSTAND THE BASIC ELEMENTS INVOLVED IN CURRENT ELECTRICITY LEADING TO OHM'S LAW
   5.1 Define current electricity.
   5.2 Define the terms conductors and insulator.
   5.3 Define resistance and resistivity.
   5.4 State Ohm's law and solve numerical problems concerning Ohm's law.
   5.5 Solve numerical problems concerning resistances in parallel and resistances in series.
   5.6 Explain principle, construction and working of a Galvanometer and describe methods to convert a Galvanometer into a Voltmeter and Ammeter.
   5.7 Explain principle, construction and working of an electrical motor.
   5.8 Explain principle, construction and working of an electrical generator.

6. UNDERSTAND USE OF PHOTO EMMISSIVE CELLS FOR COUNTING PRINTING PAPERS AND OPERATING THE PRESS AUTOMATICALLY
   6.1 State and explain photo emission.
   6.2 Explain photo electric effect as propounded by Einstein.
   6.3 Explain construction and working of a photo cell.
   6.4 Describe working of photo multipliers.
   6.5 Enumerate the uses of photo cells especially with reference to web-breaking detector in printing machine and electronic engravers.

7. UNDERSTAND THE CONCEPTS OF ELECTRONICS USED IN PRINTING INDUSTRY
   7.1 Explain thermionic emission.
   7.2 State space charge effect.
   7.3 Describe functions of a diode tube.
   7.4 Describe characteristics curve of a diode tube.
   7.5 Describe function and characteristics of a triode tube.
   7.6 Give static curve of a triode tube.
   7.7 Explain working of a triode tube as an amplifier.

8. UNDERSTAND THE REPLACEMENT OF VACUUM TUBE BY SEMICONDUCTOR DEVICES DUE TO THEIR ADVANTAGES OVER TUBE
   8.1 Describe silicon and germanium as semiconductor substances.
   8.2 Explain n and p type substances.
   8.3 Explain p-n junction as a diode.
   8.4 Describe working of a diode as a switch.
   8.5 Explain the behaviour of a diode as a rectifier.
   8.6 Describe working of a p-n-p and n-p-n transistor.
9. KNOW IMPORTANT INDUSTRIAL USES OF LASERS ESPECIALLY IN PRINTING TECHNOLOGY

9.1 Describe meaning of word 'laser'.
9.2 Describe the working of lasers.
9.3 Enumerate important industrial uses of lasers.
9.4 Describe working of laser printers.
BUSINESS MANAGEMENT AND ACCOUNTING

Code: MGM 242

Total Contact Hours:
Theory: 64
Practicals: 0

AIMS

The course has been designed to enable the students:
1. To understand the policies and programmes of management and proper execution thereof in industrial and commercial set up.
2. To acquaint the students to handle the accounts.
3. To solve problems of business management.

Pre-Requisite:
1. General understanding of management and accounts.
2. Ability to go through the study material.
3. Active mind.

COURSE CONTENTS

BUSINESS MANAGEMENT

1. ECONOMICS
   1.1 Definition: Adam Smith, Alfred Marshall, Professor Robbins.
   1.2 Nature and scope.
   1.3 Importance for foreman and technicians.
   1.4 Basic concepts in economics (Utility, Marginal, Income, Wealth, Saving, Investment).

2. DEMAND AND SUPPLY
   2.1 Definition.
   2.2 Law of Demand.
   2.3 Definition of Supply.
   2.4 Law of Supply.
3. FACTORS OF PRODUCTION 3 HOURS
  3.1 Land.
  3.2 Labour.
  3.3 Capital.
  3.4 Organization.

4. BUSINESS ORGANIZATION 3 HOURS
  4.1 Sole proprietorship.
  4.2 Partnership.
  4.3 Joint Stock Company.

5. SCALE OF PRODUCTION 3 HOURS
  5.1 Meaning and its determination.
  5.2 Large scale production.
  5.3 Small scale production.

6. LAWS OF RETURN 3 HOURS
  6.1 Law of increasing return.
  6.2 Law of constant return.
  6.3 Law of diminishing return.

7. ECONOMICS SYSTEMS 3 HOURS
  7.1 Free economic system.
  7.2 Centrally controlled economy.
  7.3 Mixed economic system.

8. MONEY 2 HOURS
  8.1 Barter system and its inconveniences.
  8.2 Definition of money and its functions.

9. BANK 2 HOURS
  9.1 Definition.
  9.2 Functions of a commercial bank.
  9.3 Central bank and its functions.

10. CHEQUE 2 HOURS
  10.1 Definition.
  10.2 Characteristics and kinds of cheques.
  10.3 Dishonour of cheque.
II. FINANCIAL INSTITUTION
   11.1 IMF.
   11.2 IDBP.
   11.3 PIGC.

III. MANAGEMENT
   12.1 Meaning.
   12.2 Functions of management.
   12.3 Problems of business management.

ACCOUNTING

IV. BOOK KEEPING
   11.1 Definition.
   11.2 Object.
   11.3 Double entry system.
   11.4 Important accounting terms used usually.

V. ACCOUNTING
   21.1 Definition.
   21.2 Branches.
   21.3 Functions.
   21.4 Parties interested in accounting information.

VI. NATURE OF ACCOUNTS AND RULES OF DEBIT AND CREDIT
   31. Classification of accounts.
   32. Rules of debit and credit.

VII. JOURNAL
   41. Definition and characteristics.
   42. Entry.
   43. Rules for journalising.

VIII. LEDGER
   51. Definition and features.
   52. Methods of posting.

IX. TRIAL BALANCE
   61. Definition.
   62. Objectives.
   63. How to prepare it.
TAXING TRANSACTIONS

1. Introduction.
2. Methods of recording such transactions.

SUB-DIVISION OF JOURNAL - I


SUB-DIVISION OF JOURNAL - II

1. Purchase and purchase return book.
2. Sales and sales return book.

DEPRECIATION

1.1 Definition and necessity for charging depreciation.
1.2 Fixed installment method.
1.3 Diminishing balance method.

CAPITAL AND REVENUE

1.1 Capital and revenue expenditure.
1.2 Deferred revenue expenditure.
1.3 Capital and revenue payment.
1.4 Capital and revenue profits.
1.5 Capital and revenue loss.

RECTIFICATION OF ERRORS

1.21 Book keeping and trial balance errors.
1.22 Correcting the errors.

FINAL ACCOUNTS

1.3.1 The concept of final account.
1.3.2 Preparation of trading profit and loss accounts.
1.3.3 Preparation of balance sheet.

Recommended:

- Principle of Accounting, M.A. Ghani, H.Y. Printer, Lahore.
INSTRUCTIONAL OBJECTIVES

1. UNDERSTAND THE BASIC CONCEPTS OF BOOK KEEPING
   1.1 State Book Keeping.
   1.2 Identify the uses of Book Keeping.
   1.3 Explain double entry system of Book Keeping.
   1.4 Describe basic Accounting terms.

2. UNDERSTAND ACCOUNTING AND ITS FUNCTIONS
   2.1 Define accounting.
   2.2 Explain functions of accounting.
   2.3 Describe parties interested in accounting information.

3. APPLY RULES OF DEBIT AND CREDIT
   3.1 Describe different classes of accounts.
   3.2 Explain rule of debit and credit.
   3.3 Apply rule of debit and credit.

4. UNDERSTAND JOURNAL
   4.1 Define journal and its features.
   4.2 Explain entry.
   4.3 Show entry in journal.
   4.4 Describe rules of journalising.
   4.5 Apply rules of journalising.

5. APPLY METHOD OF POSTING
   5.1 Define ledger.
   5.2 Describe characteristics of ledger.
   5.3 Explain method of posting.
   5.4 Apply method of posting.

6. PREPARE OF TRIAL BALANCE
   6.1 State trial balance.
   6.2 List objectives of trial balance.
   6.3 Prepare trial balance.

7. RECORDING OF BANKING TRANSACTIONS
   7.1 Describe banking transactions.
   7.2 Pass entries of bank transactions.
1. PREPARE CASH BOOK
   8.1 Define cash book.
   8.2 Prepare single, double and three column cash book.
   8.3 Define petty cash book.
   8.4 Prepare petty cash book.

2. PREPARE OTHER SUBSIDIARY BOOK
   9.1 Prepare purchases and purchases return book.
   9.2 Prepare sales and sales return book.
   9.3 Prepare bills receivable book.
   9.4 Prepare bills payable book.

3. APPLY DEPRECIATION METHODS
   10.1 Define depreciation.
   10.2 State necessity for charging depreciation.
   10.3 Apply fixed instalment method.
   10.4 Apply diminishing balance method.

4. Distinguish CAPITAL AND REVENUE EXPENDITURE : CAPITAL AND REVENUE RECEIPTS
   11.1 Differentiate between capital and revenue expenditure.
   11.2 Differentiate between capital and revenue receipts.

5. RECTIFY THE ACCOUNTING ERRORS
   12.1 Identify the errors in books of accounts.
   12.2 Correct the errors find in books of accounts.

6. PREPARE ANNUAL ACCOUNTS
   13.1 Describe final accounts.
   13.2 Prepare trading accounts.
   13.3 Prepare profit and loss account.
   13.4 Prepare balance sheet.
APPLIED CHEMISTRY - I

COURSE CONTENTS

FUNDAMENTAL CONCEPTS

1. Chemistry and Printing.
2. Elements, compounds and mixtures.
3. Atom, atomic weight, molecule, valency, molecular weight.
4. Symbols, formulae and equations.
5. Physical and chemical changes.
6. Physical and chemical properties.
7. Acids, bases and salts.

STUCTURE OF ATOM AND CHEMICAL BONDING

1. Fundamental particles of atom.
3. Energy levels, sub-energy levels and cebitides.
4. Electronic configuration.
5. Ionization potential, electronegativity and electron affinity.
6. Ionic bond with examples.
7. Covalent bond (polar and non-polar) Sigma and Pi bonds with examples.

4 HOURS
LIQUIDS AND SOLIDS
3.1 Physical states of matter, explanation with the help of Kinetic Molecular Theory.
3.2 Properties of liquids - Surface tension, viscosity, capillary action and diffusion.
3.3 Crystalline solids.
3.4 Isomorphism and polymorphism.
3.5 Lattice energy.
3.6 Amorphous solids.
CHEMICAL REACTIONS
4.1 Combination reactions with examples.
4.2 Decomposition reactions with examples.
4.3 Displacement reactions with examples.
4.4 Double displacement reactions with examples.
4.5 Oxidation and reduction reactions with examples.
METALS AND ALLOYS
5.1 Metals and non-metals.
5.2 Important Ores, properties and uses of Cu, Al, Zn and Fe metals.
5.3 Corrosion - Definition, causes and control.
5.4 Alloys - Introduction.
5.5 Composition, properties and uses of type metal, stainless steel and brass.
WATER
6.1 Chemical nature and properties.
6.2 Impurities.
6.3 Hardness of water-type, causes, removal.
6.4 Water used in printing industry - demineralized water.
SOLUTIONS AND COLLOIDS
7.1 Introduction to solution
7.2 Concentration units.
7.3 Solubility and factors affecting the solubility.
7.4 Colloids - Introduction, types, preparation properties and uses in printing.
8. HALOGENS
   8.1 Introduction.
   8.2 Preparation, properties and uses of chlorine.
   8.3 Preparation, properties and uses of HCl.

9. ELECTROLYTES
   9.1 Introduction.
   9.2 Theory of Ionization (Arrhenius)
   9.3 Solubility product
   9.4 Electrolysis with examples.
   9.5 Faraday's laws of electrolysis with numericals.
   9.6 Applications of electrolysis - electroplating, etc.
   9.7 pH of solutions and pH scale.
   9.8 Strength of acids and bases.
   9.9 Measurement of pH and importance of pH in printing industry.
   9.10 Buffers.
PRACTICALS

96 HOURS

1. To study the working of Bunsen burner.
2. To study some elementary operations in glass blowing.
3. To weigh the object on an analytical balance.
4. To separate the ingredients of the given mixture (Sand and NaCl, alcohol+water, etc.)
5. To obtain the distilled water from river water.
6. To determine the hardness of water.
7. Preparation of crystal of CuSO4 and KNO3
8. To determine the solubility of the given compounds.
9. To determine the M.P. and B.P. of the given solids and liquids respectively.
10. To determine the equivalent weight of Mg.
11. To purify the compounds used in printing.
12. To prepare different solutions used in printing industry according to given formula.
13. To verify Faraday’s laws of electrolysis.
14. To determine the surface tension and viscosity of liquids.
15. To determine pH of the given solutions.
16. To separate the mixture of various inks by paper chromatography.
17. Detection of acidic and basic radicals of salts.

Books Recommended:

1. Text Book of Chemistry for Class XI, Dr. Rehman chaudhry, Dr. Zafar iqbal, Dr. M. Munawar iqbal, etc., Chohan Book Depot, Urdu Bazar, Lahore
Math 223  APPLIED MATHEMATICS

Total Contact Hours

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>96</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Pre-requisite: Must have completed Mathematics I.

AIMS  The students will be able to:

1. Solve problems of Calculus and Analytic Geometry.
2. Develop mathematical skill, attitudes and logical perception in the use of mathematical instruments.
3. Apply principles of Differential Calculus to work out rate measures, velocity, acceleration, maxima & minima values
4. Use Principles of Integral Calculus to compute areas & volumes.
5. Acquire proficiency in solving technological problems with mathematical clarity and insight.

COURSE CONTENTS

1. FUNCTIONS & LIMITS.  6 Hours
   1.1 Constant & Variable Quantities
   1.2 Functions & their classification
   1.3 The concept of Limit
   1.4 Limit of a Function
   1.5 Fundamental Theorems on Limit
   1.6 Some important Limits
   1.7 Problems

2. DIFFERENTIATION  6 Hours
   2.1 Increments
   2.2 Differential Coefficient or Derivative
   2.3 Differentiation ab-initio or by first Principle
   2.4 Geometrical Interpretation of Differential Coefficient
   2.5 Differential Coefficient of X^n, (ax + b)^n
   2.6 Three important rules
   2.7 Problems

3. DIFFERENTIATION OF ALGEBRAIC FUNCTIONS  9 Hours
   3.1 Explicit Functions
   3.2 Implicit Functions
   3.3 Parametric forms
   3.4 Problems

4. DIFFERENTIATION OF TRIGONOMETRIC FUNCTIONS  6 Hours
   4.1 Differential Coefficient of Sin x, Cos x, Tan x from first principle.
   4.2 Differential Coefficient of Cosec x, Sec x, Cot x.
   4.3 Differentiation of inverse Trigonometric functions.
5. DIFFERENTIATIONS OF LOGARITHMIC & EXPONENTIAL FUNCTIONS 6 Hours
5.1 Differentiation of ln x
5.2 Differentiation of Log a^x
5.3 Differentiation of a^x
5.4 Differentiation of e^x
5.5 Problems

6. RATE OF CHANGE OF VARIABLES. 6 Hours
6.1 Increasing and decreasing functions
6.2 Maxima and Minima values
6.3 Criteria for maximum & minimum values
6.4 Methods of finding maxima & minima
6.5 Problems

7. INTEGRATION 9 Hours
7.1 Concept
7.2 Fundamental Formulas
7.3 Important Rules
7.4 Problems

8. METHODS OF INTEGRATION 9 Hours
8.1 Integration by substitution
8.2 Integration by parts
8.3 Problems

9. DEFINITE INTEGRALS 6 Hours
9.1 Properties
9.2 Application to area
9.3 Problems

10. DIFFERENTIAL EQUATIONS 6 Hours
10.1 Introduction
10.2 Degree and Order
10.3 First order differential equation
10.4 Solution
10.5 Problems

11. PLANE ANALYTIC GEOMETRY & STRAIGHT LINE 6 Hours
11.1 Coordinate System
11.2 Distance Formula
11.3 The Ratio Formula
11.4 Inclination and slope of a line
11.5 The slope Formula
11.6 Problems

12. EQUATIONS OF STRAIGHT LINE 6 Hours
12.1 Some important Forms
12.2 General Form
12.3 Angle Formula
12.4 Parallelism & Perpendicularity
12.5 Problems

13. **EQUATIONS OF CIRCLE**
   13.1 Standard form of Equation
   13.2 Central form of Equation
   13.3 General form of Equation
   13.4 Radius & Coordinates of the centre
   13.5 Problems

14. **STATISTICS**
   14.1 Concept of mean, median and mode
   14.2 Standard deviation
   14.3 Laws of probability
   14.4 Problems

**REFERENCE BOOKS**

1. Thomas Finny- Calculus and Analytic Geometry
INSTRUCTIONAL OBJECTIVES

1. USE THE CONCEPT OF FUNCTIONS AND THEIR LIMITS IN SOLVING SIMPLE PROBLEMS.
   1.1 Define a function.
   1.2 List all type of functions.
   1.3 Explain the concept of limit and limit of a function.
   1.4 Explain fundamental theorems on limits.
   1.5 Derive some important limits.
   1.6 solve problems on limits.

2. UNDERSTAND THE CONCEPT OF DIFFERENTIAL COEFFICIENT
   2.1 Derive mathematical expression for a differential coefficient.
   2.2 Explain geometrical interpretation of differential coefficient.
   2.3 Differentiate a constant, a constant associated with a variable and the sum of finite number of functions.
   2.4 Solve related problems.

3. USE RULES OF DIFFERENTIATION TO SOLVE PROBLEMS OF ALGEBRAIC FUNCTIONS.
   3.1 Differentiate ab-initio $x^n$ and $(ax+b)^n$.
   3.2 Derive product, quotient and chain rules.
   3.3 Find derivatives of implicit functions and explicit functions.
   3.4 Differentiate parametric forms, functions w.r.t another function and by rationalization.
   3.5 Solve problems using these formulas.

4. USE RULES OF DIFFERENTIATION TO SOLVE PROBLEMS INVOLVING TRIGONOMETRIC FUNCTIONS.
   4.1 Differentiate from first principle sin x, Cos x, tan x.
   4.2 Derive formula Derivatives of Sec x, Cosec x, Cot x.
   4.3 Find differential coefficients of inverse trigonometric functions.
   4.4 Solve problems based on these formulas.

5. USE RULES OF DIFFERENTIATION TO LOGARITHMIC AND EXPONENTIAL FUNCTIONS.
   5.1 Derive formulas for differential coefficient of Logarithmic and exponential functions.
   5.2 Solve problems using these formulas.

6. UNDERSTAND RATE OF CHANGE OF ONE VARIABLE WITH RESPECT TO ANOTHER.
   6.1 Derive formula for velocity, acceleration and slope of a line.
   6.2 Define an increasing and a decreasing function, maxima and minima values, point of inflexion.
   6.3 Explain criteria for maxima and minima values of a function.
   6.4 Solve problems involving rate of change of variables.

7. USE RULES OF INTEGRATION IN SOLVING RELEVANT PROBLEMS.
   7.1 Explain the concept of integration.
   7.2 State basic theorems of integration.
   7.3 List some important rules of integration.
   7.4 Derive fundamental formulas of integration.
   7.5 Solve problems of integration based on these rules/formulas.
8. UNDERSTAND DIFFERENT METHODS OF INTEGRATION
   8.1 List standard formulas of Integration.
   8.2 Integrate a function by substitution method.
   8.3 Find integrals by the method of integration by parts.
   8.4 Solve problems using these methods.

9. UNDERSTAND METHODS OF SOLVING DEFINITE INTEGRALS.
   9.1 Define definite integral.
   9.2 List properties of definite integrals.
   9.3 Find areas under the curves using definite integrals.
   9.4 Solve problems of definite integrals.

10. USE DIFFERENT METHODS OF INTEGRATION TO SOLVE DIFFERENTIAL EQUATIONS
    10.1 Define a differential equation, its degree and order
    10.2 Explain method of separation of variables to solve differential equation of first order and first degree.
    10.3 Solve differential equations of first order and first degree

11. UNDERSTAND THE CONCEPT OF PLANE ANALYTIC GEOMETRY.
    11.1 Explain the rectangular coordinate system.
    11.2 Locate points in different quadrants.
    11.3 Derive distance formula.
    11.4 Prove section formulas.
    11.5 Derive Slope Formula
    11.6 Solve problem using these formulas.

12. USE EQUATIONS OF STRAIGHT LINE IN SOLVING PROBLEMS.
    12.1 Define a straight line.
    12.2 Write general form of equation of a straight line.
    12.3 Derive slope intercept and intercept forms of equations of a straight line.
    12.4 Derive expression for angle between two straight lines.
    12.5 Derive conditions of perpendicularity and parallelism of two straight lines.
    12.6 Solve problems involving these equations/formulas.

13. SOLVE TECHNOLOGICAL PROBLEMS USING EQUATIONS OF CIRCLE.
    13.1 Define a circle.
    13.2 Describe standard, central and general forms of the equation of a circle.
    13.3 Convert general form to the central form of equation of a circle.
    13.4 Derive formula for the radius and the coordinates of the center of a circle from the general form.
    13.5 Derive equation of the circle passing through three given points.
    13.6 Solve problems involving these equations.

14. UNDERSTAND THE BASIC CONCEPT OF STATISTICS.
    14.1 Define mean, median and mode
    14.2 Explain standard deviation
    14.3 State laws of probability
    14.4 Calculate the above mentioned quantities using the proper formula.
OFF SET PRINTING – I

PGA-202

<table>
<thead>
<tr>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Contact Hours:
Theory: 32
Practical: 96

AIM:
To acquaint the students with the knowledge of Offset Printing techniques and also the method, procedure, operation and safety precautions while operating the Offset Machine.

COURSE CONTENTS

1 Brief History and Principles of Lithography 04 Hours
1.1 The invention of lithography
1.2 The basic principle of lithography
1.3 Basic theory of offset printing
1.4 Application of lithography process
1.5 Advantages of offset printing method

2 Types of Lithography Presses 04 Hours
2.1 Rotary and Flatbed press
2.2 Web fed and sheet fed offset press
2.3 Proofing machines

3 Preventive Maintenance 03 Hours
3.1 Operating equipment
3.2 Method of oiling and greasing / lubricating the machine

4 Inking System of an Offset Press 03 Hours
4.1 Function of inking system
4.2 Types of inking system
4.3 Ink form rollers pressure setting

5 Dampening System of an Offset Press 03 Hours
5.1 Function of dampening system
5.2 Dampening unit configuration
5.3 Dampening unit operation

6 Delivery System of an Offset Press 02 Hours
6.1 The function of delivery system
6.2 Delivery pile controls

7 Offset Press Feeders 02 Hours
7.1 Types of feeder
7.2 Function of feeder
7.3 Setting the feeder

8 Printing Machine Cylinders 03 Hours
8.1 Plate blanket, impression cylinder configuration
8.2 Arrangements of cylinder

9 Offset Blankets Utilization 02 Hours
9.1 Qualities of good blanket
9.2 Function of blanket on offset press
9.3 Fitting a new blanket
9.4 Cleaning operation
9.5 Storage and care of blanket
9.6 Structure and properties of an offset blanket

10 Preparing Machine For Printing a Single Colour Job (Black & White) 04 Hours
10.1 Outline of the procedure and initial preparation of machine
10.2 Preparation of offset machine for printing
10.3 Preparing the printing unit
10.4 Making trial impressions and producing the pass sheet

11 Storage of Plates 02 Hours
11.1 Precautions in handling and storage of unused plates
11.2 Care of storage of developed plates
11.3 Putting the plate under asphaltum

Recommended Books
1 A Manual For Lithographic Press Operations
A.S. Proter, Litho Training Services Ltd.
2 Lithographic Offset Press Operating, Charles W. Latham,
Graphic Arts Technical Foundation
3 Printing Technology, J. Michael Adama, David D. Fuax
and Lloyd J. Reeber, Delmar Publishing Inc., New York USA
4 Sheetfed Offset Press Operating by Lloyd P.DeJidas, Jr,
and Thomas M.Destree
<table>
<thead>
<tr>
<th></th>
<th>Practical Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Showing different samples with different methods of printing</td>
</tr>
<tr>
<td>2</td>
<td>Lubricating the machine</td>
</tr>
<tr>
<td>3</td>
<td>Showing illustrations (charts) regarding safety precautions associated with offset printing</td>
</tr>
<tr>
<td>4</td>
<td>Setting ink form rollers (pressure setting) by ink and film strip method</td>
</tr>
<tr>
<td>5</td>
<td>Setting the dampening form rollers</td>
</tr>
<tr>
<td>6</td>
<td>Setting the feeder</td>
</tr>
<tr>
<td>7</td>
<td>Setting the delivery system</td>
</tr>
<tr>
<td>8</td>
<td>Mounting the plate on the press</td>
</tr>
<tr>
<td>9</td>
<td>Mounting the new blanket</td>
</tr>
<tr>
<td>10</td>
<td>Make ready procedure for monochromic job</td>
</tr>
<tr>
<td>11</td>
<td>pH control and its checking</td>
</tr>
<tr>
<td>12</td>
<td>Gumming up and desensitizing the plate on press</td>
</tr>
<tr>
<td>13</td>
<td>Proper cleaning of inking and dampening system</td>
</tr>
<tr>
<td>14</td>
<td>Ink mixing and color matching by using process color inks as per sample</td>
</tr>
</tbody>
</table>
Instructional Objectives

1 Understand History and Principles of Lithography
   1.1 Describe invention of lithography
   1.2 Explain application of lithography process
   1.3 Explain the advent of offset printing
   1.4 Describe theory of offset printing
   1.5 Explain the basic principle of lithography

2 Understand Different Types of Lithography Presses
   2.1 Explain Rotary and Flatbed press
   2.2 Explain Web fed and sheet fed offset press
   2.3 Explain Proofing machines

3 Understand Preventive Maintenance
   3.1 Describe operating the equipments
   3.2 Explain personal cleanliness, fire safety and electrical safety
   3.3 Explain method of oiling and greasing / lubricating the machine

4 Understand Inking System of an Offset Press
   4.1 Explain inking system
   4.2 Explain types of inking system
   4.3 Explain Ink form rollers pressure setting

5 Understand Dampening System of an Offset Press
   5.1 Explain function of dampening system
   5.2 Describe dampening unit configuration
   5.3 Explain dampening unit operation

6 Understand Delivery System of an Offset Press
   6.1 Explain the function of delivery system
   6.2 Describe delivery pile controls

7 Understand Offset Press Feeders
   7.1 Explain the types of feeder
   7.2 Explain function & purpose of feeder
   7.3 Explain setting the feeder

8 Understand Printing Machine Cylinders
   8.1 Explain plate blanket, impression cylinder configuration
   8.2 Describe arrangements of cylinder

9 Understand Offset Blankets Utilization
   9.1 Explain qualities of good blanket
   9.2 Describe function of blanket on offset press
9.3 Explain fitting a new blanket
9.4 Explain Cleaning operation
9.5 Describe storage and care of blanket
9.6 Describe structure and properties of an offset blanket

10 Understand Preparing Machine For Printing a Single Colour Job (Black & White)
10.1 Explain outline of the procedure and initial preparation of machine
10.2 Describe preparation of offset machine for printing
10.3 Explain preparing the printing unit
10.4 Explain making trial impressions and producing the pass sheet

11 Understand Storage of Plates
11.1 Explain precautions in handling and storage of unused plates
11.2 Describe care of storage of developed plates
11.3 Explain putting the plate under asphaltum
PGA 211 QUALITY ASSURANCE AND SAFETY MEASURES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**AIM:**
The students will be able to:
- Understand the place of quality system in quality management.
- Have a broad knowledge of BS 5750/ISO-9000
- Calculate the costs of quality
- Understand the safety, Procedure, causes of accidents, methods of prevention of accidents.

**COURSE CONTENTS**

1. **Introduction and Importance of Safety** 02 Hours
   - 1.1 Safety and accidents
   - 1.2 Accidents
   - 1.3 Importance of safety practices in Institute workshop
   - 1.4 Safe work practices
   - 1.5 Fire prevention
   - 1.6 Ventilation

2. **Accidents in Flow Production Industry** 03 Hours
   - 2.1 Introduction, Types of Accidents in Flow process industry
   - 2.2 Causes of accidents
   - 2.3 Human causes of accidents
   - 2.4 Behaviouristic causes of accidents
   - 2.5 Causes of Industrial accidents
   - 2.6 Environmental causes of accidents
   - 2.7 Administrative causes of accidents

3. **Method of Prevention of Accidents** 03 Hours
   - 3.1 Controlling behaviouristic causes
   - 3.2 Controlling administrative causes
   - 3.3 Educate good handling technique
   - 3.4 Controlling environmental causes

4. **Personal Protective Equipment** 02 Hours
   - 4.1 Personal protection devices
   - 4.2 Importance of personal protective devices

5. **Fire Accidents** 04 Hours
   - 5.1 Fire hazards
   - 5.2 Causes of accidents due to fire

6. **Analyzing the Causes of Accidents** 02 Hours
   - 6.1 General causes of accidents
6.2 Safety inventory, accident report
6.3 Collection of accident data for analyzing the causes of accident

7 **Know the Methods of Providing First Aid** 01 Hours
7.1 First Aid
7.2 Importance of First Aid

8 **Understand the Methods and Procedures For Promoting Safety** 03 Hours
8.1 Method of promoting safety concepts
8.2 Method of promoting safety concept by display charts

9 **What is Quality?** 02 Hours
9.1 Introduction
9.2 Activity
9.3 The costs of quality

10 **The Four M’s of Quality** 02 Hours
10.1 Manpower
10.2 Materials
10.3 Machinery
10.4 Methods

11 **Tools For Quality Assurance** 02 Hours
11.1 Check sheets
11.2 Histogram
11.3 Process flowcharts
11.4 Control charts
11.5 Pareto analysis
11.6 Fishbone diagram

12 **Total Quality Management** 01 Hours

13 **Quality Circles** 03 Hours
13.1 Structure of Quality Circle
13.2 Quality steering group
13.3 Coordinator
13.4 Quality circle leaders
13.5 Quality circle members

14 **Operations of Quality Circle** 02 Hours
14.1 Employee reaction
14.2 Outcomes of quality circle

15 **Zero Defect Programme** 02 Hours
15.1 Management commitment
15.2 Quality improvement team
15.3 Quality measurement
15.4 Cost of quality
15.5 Corrective action
15.6 Zero defect planning
15.7 Supervisor training

**Books Recommended**

1. Professional Management for Printers
   Chriss Green (Blue Print)

2. Safety Practices and Procedures
   By National Book Foundation, Islamabad, Pakistan
INSTRUCTIONAL OBJECTIVES

1 Introduction the Importance of safety
   1.1 Describe safety and accidents
   1.2 Describe the importance of safety Practices in Institute workshop
   1.3 State cost of accident
   1.4 Describe fire prevention
       State ventilation

2 Understand Accidents in Flow Production Industry
   2.1 State the types of Accidents in Flow process industry
   2.2 Describe causes of accidents

3 Understand the Method of Prevention of Accidents
   3.1 List the accidents in paper and board mills and printing industry
   3.2 Describe the method of prevention of accidents in flow process industries

4 Understand Personal Protective Equipment
   4.1 State protective devices
   4.2 List personal protective devices
   4.3 State the importance of personal protective devices
   4.4 Describe the protective devices for hand, face and human body

5 Understand the Fire Accidents
   5.1 Identify fire hazards
   5.2 List the causes of accidents due to fire

6 Understand Analyzing the Causes of Accidents
   6.1 Identify the general causes of accidents
   6.2 Record safety inventory, accident report
   6.3 Collect the accident data for analyzing the causes of accident

7 Understand the Know the Methods of Providing First Aid
   7.1 Identify the importance of first aid
   7.2 Explain the methods of providing first aid

8 Understand the Methods and Procedures For Promoting safety
   8.1 List methods of promoting safety concepts
   8.2 Describe method to promote safety concept by display charts

9 Understand the Quality
   9.1 Explain the introduction
   9.2 Define activity
   9.3 Explain the costs of quality

10 Understand The Four M’s of Quality
   10.1 Describe the Manpower
   10.2 Explain he materials
10.3 Describe the machinery
10.4 Explain the methods

11 Understand the Tools For Quality Assurance
11.1 Define check sheets
11.2 Describe the histogram
11.3 Explain process flowcharts
11.4 Define control charts
11.5 Explain pareto analysis
11.6 Describe fishbone diagram

12 Understand Total Quality Management

13 Understand the Quality Circles
13.1 Explain the structure of Quality Circle
13.2 Describe the quality steering group
13.3 Describe the Coordinator
13.4 Describe the quality circle leaders
13.5 Describe the circle members

14 Understand the Operations of Quality Circle
14.1 Define employee reaction
14.2 Explain outcomes of quality circle

15 Understand the Zero Defect Programme
15.1 Define management commitment
15.2 Describe quality improvement team
15.3 Describe quality measurement
15.4 Explain the cost of quality
15.5 Describe corrective action
15.6 Explain the zero defect planning
15.7 Explain the supervisor training
AIM:-
The aim of this course is to enable the students to understand & handle and operate different types of process cameras, scanner processors and all other latent digital equipment.

COURSE CONTENTS

1 Colour and Light Relation  
1.1 Basic Colour Theory of Light  
1.2 Spectrum of Light  
1.3 Additive and Subtractive Colours  

2 Types of Original  
2.1 Original  
2.2 Kinds of original by structure  
2.3 Kinds of original by design  
2.4 Care & handling of design  

3 Colour Separation  
3.1 Basic of colour separation  
3.2 Types of colour separation  

4 Colour Management / colour correction  
4.1 Colour management  
4.2 Colour correction  
4.3 Importance of color correction  
4.4 Different methods of colour correction  

5 Film Development  
5.1 Action of developer on film  
5.2 Types of developer  
5.3 Different techniques of development  
5.4 Factors of development  
5.5 Automatic processing  

6 Colour Scanner  
6.1 Scanner development  
6.2 Different parts of scanner  
6.3 Kinds of Scanner  
6.4 Scanner operation  
6.5 Flate bed + Drum Scanner  
6.6 Scanner programming
6.7 Input & output devices
6.8 Scanner principles
6.9 Different functions: montage, image merge, colour swap, grid, pixel-edit and cutouts

7 **Electronic page composition**

7.1 Introduction to Electronic Page Composition System
7.2 Peripherals and Input / Output devices
7.3 Page make up system and introduction to its components
7.4 Storage and image editing
7.5 Single page planning to the integration of text and complex images

8 **Image Setter**

8.1 Functions of image setter
8.2 Different parts and their functions
8.3 Input and output

**Helping Book**

1 Color Separation Photography by GATE
   (Graphic Arts Technical Education)
PRACTICALS (192 Hrs.)

1. Showing different types of original for Graphic Reproduction Techniques
2. Showing different illustrations and charts of Additive and Subtractive synthesis and colour combination
3. Step by step processing of making a set of four colour separation by indirect method from opaque and transparent original by camera and contact
4. Step by step process of making a set of four colour separation by direct method
5. Comparison between colour corrected and under corrected reproduction. Practice of dot etching (local and tray retouching and opaquing)
6. Black printer negative making by different techniques
7. Step by step process of making an under colour removal
8. Making mask shadow and highlight mask by different techniques
9. Step by step process of making a colour corrected mask
10. Taking density readings on densitometer and calculation of density range. Plotting graph of different readings
11. Showing charts and diagrams of colour scanner and demonstration on colour scanner
12. Scanner input, adjustment of scanner according to original. Adjust special arrangement of correction if necessary
13. Scanner programming, drum setting, placing original, colour adjustment, control of gradation, tonal adjustment
14. Screen ruling and screen angle setting, compensation, film exposure and output
15. Layout and designing on computer link with scanner, scanner output
16. Special arrangement on scanner like montage, image merge, colour swap, grid, pixel edit and cutouts
17. Showing different charts and diagrams on electronic page composition system
18. Page layout, storage and image editing on EPC
19. Single page planning with text and complex images on EPC
20. Different parts and their function of image setter
21. Input and Output devices, step by step operation on image setter
Instructional Objectives

1  **Understand light as a source of color**
   1.1 Define visible spectrum
   1.2 Describe light as a form of energy in own word
   1.3 Explain the visible spectrum
   1.4 Explain additive and subtractive primary color and its function

2  **Understand the different types of original**
   2.1 Describe the types of original
   2.2 Describe the care and handling of original
   2.3 Describe the original by structure

3  **Understand the importance of color spectrum**
   3.1 Define color spectrum
   3.2 Explain purposes of color separation
   3.3 Enlist tools and materials

4  **Understand the need of colour management / colour correction**
   4.1 Describe colour management
   4.2 Explain colour correction
   4.3 Describe importance of colour correction
   4.4 Explain different methods of colour correction

5  **Understand the film development technique**
   5.1 Describe the action of developer on film
   5.2 Explain the types of developer
   5.3 Describe the different techniques of development
   5.4 Explain the factors of development
   5.5 Describe the automatic processing

6  **Understand electronic color separation**
   6.1 Define color scanner and its development
   6.2 Explain main parts and their function
   6.3 Describe scanner operation system
   6.4 Explain scanner programming
   6.5 Describe input and output devices
7 Understand electronic page composition system

7.1 Understand electronic page composition system and its advantages
7.2 Describe analysis and modifications
7.3 Explain page make up system with modular components
7.4 Define storage and image editing
7.7 Explain single page planning text and complex images

8 Understand the functions of image setters

8.1 Define the function of image setters
8.2 Describe step by step operation
8.3 Describe the function of input and output
AIMS
This is the continuation of Graphic Design – I and the purpose is to equip the students with theoretical as well as practical aspects of Advance Digital Tools in Graphic Design and their relation to Printing Technology.

COURSE CONTENTS

1. **Introduction To Rastar And Pixelbase Software** 06 HOURS
   1.1 Adobe Photoshop
   1.2 Adobe Illustrator
   1.3 Adobe InDesign
   1.4 Corel Photo Paint

2. **Importance Of Typography And Calligraphy** 03 HOURS
   2.1 Calligraphy (Urdu, English and Advertising style)
   2.2 Selection of Fonts
   2.3 Letter Spacing

3. **Introduction To Photography** 02 HOURS
   3.1 Indoor and Out Door Photography
   3.2 Photography role in Graphic Design
   3.3 Digital Cropping

4. **Cooprate Design** 03 HOURS
   4.1 Symbolism, Trade Mark
   4.2 Monogram, Logo
   4.3 Insignia, Crest

5. **Poster Design** 02 HOURS
   5.1 Define aims of Poster as an Art
   5.2 Poster Size and Placement
   5.3 Indoor and Out Door Poster

6. **Magazine Design** 04 HOURS
   6.1 Magazine format
   6.2 Production stages

7. **Book Designing** 08 HOURS
   7.1 Introduction to Book Designing
   7.2 The Design brief (Flow Chart)
   7.3 Book format. Double Page Spread Layout
   7.4 Imposition, Dummy
   7.5 Grid System
   7.6 Book Jacket
   7.7 Booklet, Folder and Catalogue
8. **Packaging Design**  
   8.1 Material for packaging  
   8.2 Form and Function  
   8.3 Constructing the Package

9. **Production**  
   9.1 Scaling copy  
   9.2 Paste-up

**Book Recommended**

1. What is graphic design? Quentin Nework  
   Essential design Hand Book

5. The ABC’s of typography By Sandra B. Ernst

6. The complete guide & digital graphic design Thames & Hudson

7. An introduction to Art Technologies  
   Reg Smith, Michael Wright, James Horton

5. Graphic design school  
   The Principles and practices of graphic design  
   David Dabner, Thames & Hudson

6. Packaging design, Bill Stewart
PRACTICALS  (192 HOURS)

1. Computer Software Practice of raster base software Adobe Photoshop, Adobe Illustrator, Adobe In design & Corel Photo Paint etc.
2. Exercises on Converting Pictorial Arts into Graphic Shapes, Simple, Bold and in Abstract Form.
3. Converting Illustration, Photograph through tracing or direct drawing into black and white liner.
   Design and then another exercise in different media.
4. Trade mark, Monogram (Comprehensive, Rough Sketches).
5. Design for Letter head, Envelopes and Visiting Cards.
7. Prepare a Dummy.
10. Magazine Design (Comprehensive).
14. Magazine or Newspaper Ad design.
15. Poster Design (Comprehensive).
16. Typography practice, Simple and Bold style.
17. Typography Practice, Design in Colour, Spacing in Colour&LabelDesign etc.
INSTRUCTIONAL OBJECTIVES

1. Understand the importance of computer as raster and pixel base software as a tool
   1.1 Define Graphic Software
   1.2 Define Adobe Photoshop
   1.3 Define Adobe Illustrator
   1.4 Define Adobe In Design
   1.5 Define Corel Photo Paint
   1.6 Define Graphic Software Page make up System

2. The Importance Of Typography And Calligraphy
   2.1 Identify Font style on computer.
   2.2 Define the relationship between Lettering and Typography
   2.3 Define Calligraphy (Urdu and Advertising style)

3. The Importance Of Families, Series And Font Spacing
   3.1 Define families of Font.
   3.2 Identify series and Font.
   3.3 Define Spacing in Font.
   3.4 Define Justification.

4. The Importance Of Font Placement In Layout
   4.1 Explain indicating Font on the layout.
   4.2 Draw body-copy indication sketch.

5. The Importance Of Long-Term Design
   5.1 Explain Symbolism.
   5.2 Identify Trade Mark and Logo design.
   5.3 Draw and prepare Trade Mark.

6. The Importance Of Letter Head
   6.1 Explain letterhead Design.
   6.2 Explain envelop and visiting card.
   6.3 Draw and prepare envelope and visiting card design.

7. The importance of book designing
   7.1 Explain standard of book design.

8. The Step By Step Procedure Of Book Designing
   8.1 Explain briefings.
   8.2 Explain rough idea.
   8.3 Draw designer’s flow chart.
   8.4 Describe the different stages involved in publishing a book.

9. The Importance Of Layout Format
   9.1 Explain picture window layout.
   9.2 Define heavy copy and frame layout.
   9.3 Explain multilane and silhouette layout.

10. Importance Of Book And Double Page Spread Layout
10.1 Identify book format.
10.2 Explain the purpose of book formation.
10.3 Define double page spread layout.
10.4 Draw the sketch of double page layout.

11. The Importance Of Grid System In Publication
   11.1 Define grid system.
   11.2 Explain different types of grid.
   11.3 Draw grid.

12. The Importance Of Imposition And Dummy
   12.1 Define imposition.
   12.2 Explain dummy procedure.
   12.3 Describe an imposition of 8 and 16 pages layout.
   12.4 Prepare dummy.

13. The Importance Of Book Jacket
   13.1 Identify book jacket.
   13.2 Explain the purpose of book jacket.
   13.3 Prepare book jacket design.

14. The Importance Of Booklet Folder And Catalogue
   14.1 Define folder, catalogue and Booklet.
   14.2 Identify folder, catalogue and Booklet.
   14.3 Explain difference between folder, catalogue and Booklet.

15. The Importance Of Magazine Format
   15.1 Explain Format.
   15.2 Define Magazine format.
   15.3 Identify variety of Magazine format.

16. The Importance Of Poster As An Art
   16.1 Define Poster.
   16.2 Explain Poster.
   16.3 Define Poster as an Art.
   16.4 Explain Poster importance.
   16.5 Prepare and draw Poster layout.

17. The Importance Of Poster Size And Placement
   17.1 Define Poster sizes.
   17.2 Explain the placement of poster.

18. The Importance Of Photography In Graphic Design
   18.1 Define photography.
   18.2 Explain the role of photography in Graphic design.
   18.3 Indoor, Outdoor and Digital Photography.
   18.4 Explain enlargement and reduction.
   18.5 Define enlargement ratio.
   18.6 Digital Editing.
19. The Importance Of Cropping
   19.1 Define cropping.
   19.2 Explain cropping method.
   19.3 Define how to crop.

20. The Importance Of Scaling Copy
   20.1 Define scaling copy.
   20.2 Explain the two methods of scaling.

21. The Importance Of Paste-Up
   21.1 Explain paste-up.
   21.2 Define procedure of paste-up.

22. The importance of packaging design and material
    For packaging
    22.1 Enlist materials for packaging.
    22.2 Explain material for packaging.

23. The Importance Of Constructing The Packaging
    23.1 Explain constructing the package and Stages.
    23.2 Draw different shapes of Packaging Design.

24. The Importance Of Form And Function
    24.1 Define Form.
    24.2 Develop of Form Packaging Design.
    24.2 Explain the function of Packing Design.
PGA 242  CONVENTIONAL & DIGITAL PLATE MAKING

T  P  C
1  3  2

Total Contact Hours:
Theory:  32
Practical:  96

AIM:-
The aim of this subject is to understand basics of different types of lithography and photo-lithographic Plate Making. Handle different types of Plate Making materials, equipment and machines.

COURSE CONTENTS

1  History and Introduction to Lithographic Surface  01 Hours
   1.1  History of Lithography
   1.2  Hand transfer plate and original plate

2  Different Types of Photolithographic Plates  03 Hours
   2.1  Surface plates
   2.2  Deep etch plates
   2.3  Bimetal plates
   2.4  Pre-sensitized plates
   2.5  Plates for offset duplication

3  Environments & Special Working Conditions  03 Hours
   3.1  Room Layout
   3.2  Lighting
   3.3  Ventilation
   3.4  Air Conditioning
   3.5  Flooring
   3.6  Use of colours
   3.7  Waste disposal

4  Plate Making Material List  02 Hours
   4.1  Common materials used in plate making
   4.2  Storage of plate material
   4.3  Handling of material

5  Plate Making Material List  03 Hours
   5.1  The Whirler
   5.2  Printing down equipment
   5.3  Light sources
   5.4  Integrating light meters
   5.5  Processing benches
6 Plate Surface Chemistry and Classification of Lithographic Plate 03 Hours

6.1 Materials used as plate substrate
6.2 Types of grains
6.3 Plate coatings
6.4 Methods of forming the image
6.5 Press life and shelf life
6.6 Production time cost
6.7 Plate corrections
6.8 Choosing a suitable plate

7 Methods of Surface and Deep Etch Plate Production 03 Hours

7.1 Plate Exposure
   a) Light Intensity
   b) Control of light fluctuation
   c) Lamp distance from the printing down frame
7.2 Surface plate processing procedure
7.3 Deep etch processing procedure

8 Introduction of CTP, Parts / Units of CTP, CTP Technology / Kinds of CTP 07 Hours

8.1 Internal drum CTP
8.2 External drum CTP
8.3 Flat bed CTP

9 Types of Plates Used in CTP 04 Hours

9.1 Photo polymer plates
9.2 Silver halogen plates
9.3 Thermal plates

10 Advantages & Disadvantages of CTP, Comparison between CTP &CTF 03 Hours

Books Recommended

1 A manual for film planning plate making.
   A.L. Gatehouse, K.N. Raper,
   Litho training Service Ltd. London
2 The lithographic Manual,
   N. Blair, Graphic Arts Technical Foundations
3 Modern Lithography,
   Ion Faux, Macdonald & Evans Ltd. London
4 Lithographic Plate Making,
   Robert F. Reed,
   Graphic Arts Technical Foundations
# PRACTICALS

1. Graining procedures, preparation and treatment of lithographic surface. Plate graining and preparation for various class of work
2. Operating plate whirlers, vacuum frames, setting carbon arc lamps
3. Direct drawing on plate and its treatment of printing
4. Operating graining machines
5. Practice and steps for making surface plate on un-grain aluminum
6. Preparation of egg albumen surface plate coating
7. Methods and steps for making a deep etch plate
INSTRUCTIONAL OBJECTIVES

1 **Understand the principle of Lithography and Surface of Lithography**
   1.1 State history of lithography
   1.2 State difference between hand and original plate
   1.3 Explain steps for making hand and original plates

2 **Understand the Basics of Photolithographic Plates**
   2.1 Explain different photo lithographic plates.
   2.2 State advantages and disadvantages of photo lithographic plates.

3 **Understand the Environments and Special Working Conditions of Plate Making Room**
   3.1 Describe the plate making room layout conditions.
   3.2 Make layout of the wet area, dry area placing of equipment and material.
   3.3 Explain the general room light conditions.
   3.4 Explain the safety of room illumination for plate sensitivity.
   3.5 Describe the importance of ventilation in plate making room.
   3.6 Explain Air Conditioning factors.
   3.7 Explain the requirements of flooring in the plate making room.
   3.8 Explain the use of colour on walls and ceiling in the plate making room.
   3.9 State the effects of light reflection on the plate.
   3.10 Explain the local authority safety regulation for solid and liquid wastes disposal.
   3.11 State proper methods for waste disposals.

4 **Understand the Plate Making Materials List**
   4.1 List of materials used in plate making room.
   4.2 Explain the storage of materials.
   4.3 Explain how to control the factors, temperature, humidity, etc., for good storage.
   4.4 Explain system of storage and stock rotation (first in, first out).
   4.5 Explain handling of concentrated acids and the methods of mixing chemicals safety in plate making room.

5 **Understand the Plate Making Equipments and their Use**
   5.1 Explain the horizontal and vertical whirler and their parts.
   5.2 Explain the different types of printing down framevacuum and exposing problems.
   5.3 Describe various types of light sources used for printing down lithotographic plates.
   5.4 Describe the importance of light control for accurate exposure of plates.
   5.5 Explain of integrating light meters different parts and functions of integrating light meters.
   5.6 Explain of process benches and different types of benches used in he plate making room.
   5.7 Explain the use of automatic plate processors in plate making
5.8 Explain the plate making furniture and sink used for plate making.

6 Understand Plate Surface Chemistry and Classification of Lithographic Plate
6.1 Explain the surface chemistry, image and non-image areas.
6.2 Explain the plate grain, fine and coarseness of grain its effects on plate quality and printing quality.
6.3 Define the common techniques of graining, marble graining, sand bleasting, bush graining, and chemical graining.
6.4 Describe the plate coating used for different types of plates.
6.5 Describe the methods of forming the images of lithographic plate.
6.6 Explain the factors influence the performance of a plate on the press.
6.7 Explain is image failure, non image failure and substrate failure.
6.8 Define the term shelf life.
6.9 Explain different effects on dark reaction on different plates and storage of plate in the press.

7 Understand the Methods of Making Surface and Deep Etch Plate
7.1 Explain the importance of correct working procedures.
7.2 Define the factors for correct exposure of a plate and the term intensity and colour temperature.
7.3 Explain the steps for making the surface plate.
7.4 Explain the steps for making the deep etch plate.

8 Understand the function and working of CTP machine
8.1 Explain CTP system
8.2 Describe the function of CTP machine

9 Understand types of Plates used in CTP
9.1 Differentiate different types of CTP plates
9.2 Make comparison between different CTP plates
9.3 Describe step by step working of CTP plate

10 Understand Advantages & Disadvantages of CTP & CTF
10.1 Make comparison between CTP and CTF
10.2 Explain Advantages & Disadvantages of CTP & CTF
إسلاميات/مطالعه پاکستان

حصہ اول اسلاميات 311

0 1

حصہ دوم مطالعہ پاکستان

مخصوصاً

قرآن کیری

ورثه الفاظ - آیہ السکرتمی - میں اثر کی آخری آیات از اہم المرسول ﷺ آثارورہا رغباً

مثبت جریان

ورثہ الفاظ - آیہ السکرتمی - میں اثر کی آخری آیات از اہم المرسول ﷺ آثارورہا رغباً

بنی الإسلام على خمس شهادة ان لا لله إلا الله وقام الصلوة وابتاء الزکوة وحج البيت وصوم رمضان

الدين النصيه

المستشار المؤتمر

للمسلمین على المؤمن یست خصال یعودها إذا مرض ویشتمه اذامات

ویجیبها إذا دعاه ویسلم عليه اذالقیه ویشتم إذا عطس وینصب له

اذاغب أو اشتد لا تخن من خانک

لا يدخل الجنة قطع

ان الله حرم عليكم عقوب الامهات واضاعة المال

یسرا ولا تعسرا بشرأ ولا تنفرا

ذاق طعم الامران من رضي با الله وبالإسلام دينا وبحمدنيبا

افضل الذكر لله لا لله

حقوق وفرض

عشرة قناتی بهدر فرخ ، والیم ابرواعا کے حقوق وفرض، محاکی حقوق

إسلام کی اطلاعی افادات

صبر واحتلال یغورگرو رازیکیا عوفت- ایسیا، ایسیا
نصاب اخلاقیات (تحریر علم وفکر کے لئے)

سال سوم

Gen-311

موضوعات

- احساس وسماجی
- شیخوت کا
- عمل و انصاف
- قومی نفس کا کہہ
- تفویض و علم
- اجرائے آدیمیت
- شکاکت
- غفوریت
- برداری
- خوش تصاریف
- اثرات خوش
- جامعیت

- اپنے نسیم کی تعلیم (پڑھائی اور علم) ادارہ انسانیت شریعتی اسٹیشن ادارہ)
قانونی و فردیت

قانونی مقرراً喜欢吃肉是伊斯兰教的一个重要组成部分。

خاصیصی مقصد

اذا کا تمیز بان کر کے
اذا کا نشر کر کے
معاشرتی و غیر اعمالی زندگی میں احادیث سے انسانی حاصل کر کے

قانونی و فردیت

قانونی مقرراً喜欢吃肉是伊斯兰教的一个重要组成部分。

خاصیصی مقصد

اذا کا تمیز بان کر کے
اذا کا نشر کر کے
معاشرتی و غیر اعمالی زندگی میں احادیث سے انسانی حاصل کر کے

قانونی و فردیت

قانونی مقرراً喜欢吃肉是伊斯兰教的一个重要组成部分。

خاصیصی مقصد

اذا کا تمیز بان کر کے
اذا کا نشر کر کے
معاشرتی و غیر اعمالی زندگی میں احادیث سے انسانی حاصل کر کے

قانونی و فردیت

قانونی مقرراً喜欢吃肉是伊斯兰教的一个重要组成部分。

خاصیصی مقصد

اذا کا تمیز بان کر کے
اذا کا نشر کر کے
معاشرتی و غیر اعمالی زندگی میں احادیث سے انسانی حاصل کر کے

قانونی و فردیت

قانونی مقرراً喜欢吃肉是伊斯兰教的一个重要组成部分。

خاصیصی مقصد

اذا کا تمیز بان کر کے
اذا کا نشر کر کے
معاشرتی و غیر اعمالی زندگی میں احادیث سے انسانی حاصل کر کے

قانونی و فردیت

قانونی مقرراً喜欢吃肉是伊斯兰教的一个重要组成部分。
نصاب (مالا موم)

مظاہرۂ پاکستان

حریم

قومی پاکستان

موضوعات

- بائےڈری کے بین
- ریپلک اوراءکر
- گنگیاں والے
- گنگیاں بہباؤ
- مسلم بہباؤ
- مسلم کور
- ریاستہائے متحدہ
- ریاستہائے متحدہ کا اہم
- خبری اپنی کا ناگ
- تقریب و تدابیر
- عالمی کے بنا درجات

1956 - 1962 اور 1973 کے دو مہینے میں دو فعال
پاکستان کا کل چوگا اوراس کی کیتی میں ایک

مظاہرۂ پاکستان

حریم

قومی پاکستان

تقریبی مقام

عمومی قسم

قومی پاکستان کے تحت دو مہینے سے آگے ہم کا کسے اوہ بیان کرے

ضامنی خامہ

- بائےڈری کے بین کے اوراس کے فراغت بیان کر کے
- ریپلک اوراءکر کے اوراس کے فراغت بیان کر کے
- گنگیاں والے کے فراغت بیان کر کے
- گنگیاں بہباؤ کے فراغت بیان کر کے
- مسلم بہباؤ کے فراغت بیان کر کے
- ریاستہائے متحدہ کے فراغت بیان کر کے
- ریاستہائے متحدہ کے فراغت بیان کر کے
- ریاستہائے متحدہ کے فراغت بیان کر کے
- ریاستہائے متحدہ کے فراغت بیان کر کے
- ریاستہائے متحدہ کے فراغت بیان کر کے
- مسلم بہباؤ کے فراغت بیان کر کے
- مسلم بہباؤ کے فراغت بیان کر کے
- مسلم بہباؤ کے فراغت بیان کر کے
- مسلم بہباؤ کے فراغت بیان کر کے
INDUSTRIAL MANAGEMENT AND HUMAN RESOURCE DEVELOPMENT

Code: MGM 322

Total Contact Hours:
- Theory: 64
- Practicals: 0

Pre-Requisites:
- General understanding of management and economics activities.
- Ability to go through the study material.
- Active mind.
- Motivation.

IMS
- To develop the management skills of the subject.
- To acquaint the learner with the principles of management and human relations.
- To develop psychological approach to solve labour problems in the industrial set-up.

COURSE CONTENTS

INDUSTRIAL PSYCHOLOGY

1.1 Brief history.
1.2 Definition.
1.3 Nature and scope.

LEADERSHIP

2.1 Definition.
2.2 Types.
2.3 Qualities of a good leader.

MOTIVATION

3.1 Definition.
3.2 Types (Financial and non-financial motives).
3.3 Conflict of motives.
MORALE

4.1 Importance.
4.2 Development.
4.3 Measurement.

HUMAN ENGINEERING

5.1 Importance of human factor in industry.
5.2 Man-machine system.
5.3 Strategy for making allocation decisions.

INDUSTRIAL FATIGUE AND BOREDOM

6.1 Definition and distinction.
6.2 Psychological causes.
6.3 Objective causes.
6.4 Preventions.

INDUSTRIAL ACCIDENTS

7.1 Psychological causes.
7.2 Objective causes.
7.3 Preventions.

INDUSTRIAL PREJUDICE

8.1 Causes.
8.2 Remedies.

PUBLIC RELATION

9.1 Importance.
9.2 Functions.

GUIDANCE AND COUNSELLING

10.1 Importance.
10.2 Choice of job.
10.3 During service.

JOB EVALUATION

11.1 Importance.
11.2 Methods.
11.3 Job satisfaction.
11.4 Work simplification.
WORK APPRAISAL

12.1 Importance.
12.2 Techniques.

INDUSTRIAL MANAGEMENT

13.1 Introduction.
13.2 Functions of Management.
13.3 Subdivision of Management.
13.4 Objectives of Industrial Management.

PLANNING

14.1 The concept.
14.2 Importance of planning.
14.3 Steps in planning.
14.4 Principles of planning.

PLANT LOCATION AND LAYOUT

15.1 Plant location.
15.2 Selection of plant location.
15.3 Types of factory building.
15.4 Plant layout.
15.5 Factors affecting it.
15.6 Process and product layout.
15.7 Plant location and layout of a factory/printing press.

PERSONNEL SELECTION

16.1 Recruitment of employees.
16.2 Training.
16.3 Effects of training on production and product cost.

WAGE PAYMENT PLANS

17.1 Importance.
17.2 Principles.
17.3 Important plans.
17.4 Effects on production cost.
TYPES OF PRODUCTION
1. Job, batch, flow and mass production.
2. Types of production and cost considerations.

WORKING CONDITIONS
1. Importance.
2. Consideration.
3. Effects on efficiency and per unit cost.

TIME AND MOTION STUDY
1. The concept.
2. Importance of work study for management.
3. Sequence of motion study.
4. Steps to time study.
5. Determination of operations time.

QUALITY CONTROL
1.1 The concept.
1.2 Advantages of quality control.
1.3 Methods.

ROLE OF FOREMAN IN MANAGEMENT
2.1 Foreman's abilities.
2.2 Duties.
2.3 Functions.

FOREMAN'S KNOWLEDGE OF COST ACCOUNTING
23.1 Concept of cost accounting.
23.2 Elements of cost.
23.3 Cost accounting methods.

PRODUCTIVITY
24.1 The concept.
24.2 Importance.
24.3 Factors affecting productivity.
Recommended:


APPLIED CHEMISTRY -II

CH 323

Contact Hours:
Theory 64
Practical 96

Prerequisite:
The students should have studied Chemistry course code No. SC 272

Acquaint the students with the concepts of Organic Chemistry and its application in printing and Graphic Arts technology.

COURSE CONTENTS

ORGANIC COMPOUNDS

1. Introduction.
2. Sources of organic compounds.
3. Classification of organic compounds.
4. Functional groups, isomerism and its types.
5. Nomenclature of organic compounds according to IUPAC system.

HYDROCARBONS

1. Introduction
2. Classification of hydrocarbons.
3. Preparation, properties and uses of methane.
4. Preparation, properties and uses of ethene.
5. Polymerisation, types of polymerisation.
6. Plastics, classification of plastics and manufacture of PVC plastic.
7. Preparation, properties and uses of benzene.

COMPOUNDS WITH OXYGEN CONTAINING FUNCTIONAL GROUPS

1. Introduction.
2. Preparation, properties and uses of methyl alcohol.
3. Preparation, properties and uses of acetic acid.
4. Preparation, properties and uses of acetone.

8 HOURS

10 HOURS

6 HOURS
CHEMISTRY OF PHOTOGRAPHY

1. Introduction
2. Photographic films - introduction
3. Silver halide films
   (a) Light sensitive coating - silver halides, gelatin.
   (b) Base - polyester, etc.
4. Exposure to light.
5. Developing, function of the ingredients of the developing solution.
6. Fixing, function of the ingredients of the fixing solution.
7. Photographic reducers.
8. Photographic intensifiers.
10. Light sensitive materials used in plate making-diazocompounds, photorems.

ADHESIVES

1. Introduction.
2. Types of adhesion.
4. Natural and synthetic adhesives used in printing industry.

LUBRICANTS

1. Introduction.
2. Properties of lubricants (lubricating oil).
3. Requirements of good lubricant.

PRINTING INKS

1. Introduction.
2. Properties of inks - viscosity, tack, length, hiding power, light and chemical resistance etc.
3. Drying methods of printing inks.
4. Ingredients of printing inks, main ingredients, additional ingredients.
   (a) Pigment - introduction, properties and types.
   (b) Vehicle - introduction, properties and types.
   (c) Function of additional ingredients - driers, plasticisers, resins, extenders, wax, antioxidants, etc.
5. Types of inks according to printing processes.
PAPER

8.1 Introduction.
8.2 Raw materials used in paper making.
8.3 Manufacture of paper.
   (a) Manufacture of pulps.
   (b) Preparation of stock for paper machine.
   (c) Paper making operation.
   (d) After treatments or processes which may follow paper making - sizing, coating, conditioning, etc.
8.4 Properties of printing paper - moisture content, pH, optical properties, strength, etc.

AIR POLLUTION

9.1 Introduction.
9.2 Classification of Air pollutants according to state of matter.
   (a) Gases - CO, oxides of N, etc.
   (b) Solid, liquid, colloidal state - smoke, etc.
9.3 Effect of air pollutants on man and his environment.
9.4 Air pollution control.
PRACTICALS

96 HOURS

Preparation of organic and inorganic compounds of industrial importance.

Acid-base titrations.

To determine percentage purity of compounds.

Detection of N, Halogens and S in organic compounds.

Paper testing - properties related to printing industry.

Ink testing - properties related to printing industry.

Recommended:

Text Book of Chemistry for XII class, Dr. A. Rehman Chaudhry, Dr. Abdul Waheed, M. Zafar Iqbal Mehdi, etc.
Published by Malik Sons.


Chemistry of Graphic Arts, Paul J. Hartsoch, Graphic Arts Technical Foundation.
INSTRUCTIONAL OBJECTIVES

1. UNDERSTAND THE NATURE OF ORGANIC COMPOUNDS
   1.1 Distinguish between organic compounds and inorganic compounds.
   1.2 Describe the natural sources of organic compounds.
   1.3 Describe the types of organic compounds with examples.
   1.4 Define functional group, with examples, explain types of isomerism.
   1.5 Describe with examples the rules for naming the alkanes, alkenes, alcohols, carboxylic acids and benzene derivatives according to IUPAC system.

2. UNDERSTAND THE HYDROCARBONS
   2.1 Define hydrocarbon with examples.
   2.2 Describe the types of hydrocarbons.
   2.3 Give preparation properties and uses of methane.
   2.4 Give preparation properties and uses of ethane.
   2.5 Explain polymerisation and its types with examples.
   2.6 Explain plastic and its types, describe the manufacturing of PVC plastic.
   2.7 Describe the preparation, properties and uses of benzene.

3. UNDERSTAND THE NATURE OF COMPOUNDS WITH OXYGEN CONTAINING FUNCTIONAL GROUPS
   3.1 Define alcohols, aldehydes, ketones ethers, carboxylic acids with examples.
   3.2 Describe preparation properties and uses of methyl alcohol.
   3.3 Give preparation, properties and uses of acetic acid.
   3.4 Give preparation, properties and uses of acetone.

4. UNDERSTAND THE NATURE OF PHOTOGRAPHIC MATERIALS AND CHEMICAL REACTIONS INVOLVED IN PHOTOGRAPHY
   4.1 Define photography.
   4.2 Explain the silver halide films.
   4.3 Describe the reaction which takes place on exposing the photographic films.
   4.4 Describe the reaction which takes place on developing the photographic films and function of the ingredients of the developing solution.
   4.5 Describe the reaction which takes place in fixing the photographic films and function of the ingredients of the fixing solution.
   4.6 Write the equation of the reaction which occurs during photographic reduction. Name the two photographic reducers.
   4.7 Write the equation of the reaction which occurs during intensification. Name the two intensifiers.
   4.8 Explain the silverless films.
   4.9 Explain the meaning of the terms.
      (a) Diazo compounds.
      (b) Photopolymer. Give application for each of these materials in plate making.
UNDERSTAND THE NATURE OF ADHESIVES

5.1 Define adhesives.
5.2 Describe the types of adhesions.
5.3 State the properties of adhesives.
5.4 Describe the various types of adhesives used in the printing industry.

UNDERSTAND THE NATURE OF LUBRICANTS

6.1 Define lubricant. Name different types of lubricants.
6.2 Describe the properties of lubricant (Lubricating oil).
6.3 Give the requirements of good lubricants.

UNDERSTAND THE NATURE OF PRINTING INKS

7.1 Name the different inks. Define printing inks.
7.2 Describe the properties, viscosity, tack, length, hiding power, light resistance, chemical resistance, etc., of the printing inks.
7.3 Explain the drying methods of printing inks.
7.4 Name the ingredients of the printing inks. Describe the properties and types of pigments and vehicles of printing inks. State the function of other ingredients like drier, plasticisers, resin extenders, wax, antioxidant, etc.
7.5 Describe the types of printing inks according to the different printing processes.

UNDERSTAND NATURE OF THE PRINTING PAPERS

8.1 Name different papers. Define paper.
8.2 Describe the raw materials used in paper making.
8.3 Describe the following stages in manufacturing of paper and their effects on the properties of paper.
   (a) The manufacture of pulp.
   (b) The preparation of stock for paper machine.
   (c) The paper making operation.
   (d) After treatments or processes which may follow paper making - coating, sizing, conditioning etc.
8.4 Explain the properties - moisture content, pH, optical properties - opacity, gloss, etc., strength - tensile strength, bursting strength, surface strength of printing papers.

UNDERSTAND THE NATURE OF POLLUTANTS AND THEIR BAD EFFECTS

9.1 Define pollution, name different types of pollution.
9.2 Describe the types of air pollutants according to the state of matter.
9.3 Describe the effects of air pollutants on man and his environment.
9.4 State the methods to control the air pollution.
GRAVURE PRINTING

Code: PGA-303

AIM:-
The aim of this subject is to make the students acquaint with Photogravure cylinder making and handling the Photogravure machine and also to understand the different techniques related to this method.

COURSE CONTENTS

1. Introduction of Gravure 04 Hours
   1.1 Major methods of printing
   1.2 Comparing printing method
   1.3 Invention of gravure
   1.4 Basic theory of Gravure
   1.5 History of Gravure

2. Gravure Work Flow 04 Hours
   2.1 Kinds of work flow
   2.2 Original, negative and positive characteristics
   2.3 Reproduction photography for Gravure

3. Gravure Image Carrier Cylinder 03 Hours
   3.1 Parts of cylinder
   3.2 Cylinder bases
   3.3 Base materials
   3.4 Base specification
   3.5 Balancing

4. Electroplating 04 Hours
   4.1 Electrochemistry
   4.2 Depositing tank
   4.3 Design of depositing tank
   4.4 Electro-plating kinds
   4.5 Dechroming

5. Methods of Cylinder Preparation 04 Hours
   5.1 Diffusion etch
   5.2 Direct transfer
   5.3 Electromechanical
   5.4 Laser cutting

6. Personal & Press Room Safety 04 Hours
6.1 Personal safety
6.2 Machine safety
6.3 Press Room safety
6.4 Electric safety
6.5 Fire safety
6.6 Fire Extinguisher
6.7 Food packaging

7 Storage of Equipment & Material 03 Hours
7.1 Store and its importance
7.2 Store maintenance
7.3 Record keeping
7.4 Store of equipment
7.5 Storage of materials

8 Proof and Proofing Press 03 Hours
8.1 Proofs for Gravure
8.2 Types of Proofing
8.3 Proofing Process
8.4 Gravure Proofing Press

9 Gravure Press & Components 04 Hours
9.1 Principle of Gravure Machine
9.2 Main parts of Gravure Machine
9.3 Types of Gravure Machine
9.4 Modern trends & Developments

10 Web Handling 04 Hours
10.1 Web Arrangement
10.2 Register control
10.3 Real stands
10.4 Tension control
10.5 Troubleshooting

11 Gravure Inks & Inking Systems 04 Hours
11.1 Types of inking system
11.2 Characteristics of Gravure inks
11.3 Viscosity
11.4 Factors which effects viscosity
11.5 Troubleshooting

12 Gravure Inks Dryers 04 Hours
12.1 Need of ink dryers
12.2 Solvent removal
12.3 Dryer functioning
12.4 Drying methods
13 **Gravure Doctor Blade** 03 Hours
13.1 Importance of Doctor Blade
13.2 Types of Doctor Blade
13.3 Doctor Blade Assembly
13.4 Doctor Blade Angle and Pressure
13.5 Troubleshooting

14 **Impression Roller** 04 Hours
14.1 Function of Impression Roller
14.2 Impression Roller Covering
14.3 Impression Roller Hardness
14.4 Durometer Gauge
14.5 Impression mechanisms
14.6 Checking width of Impression Nip area
14.7 Troubleshooting

15 **Press Operations** 04 Hours
15.1 Make ready of machine
15.2 Setting the cylinder and ink
15.3 Setting the impression and drying unit
15.4 Registration
15.5 Surface and reverse printing
15.6 Troubleshooting

16 **Gravure Substrates** 04 Hours
16.1 Main kinds of substrates
16.2 Paper
16.3 Boards
16.4 Corrugated boards
16.5 Plastic film (Tin)
16.6 Foils
16.7 Laminator
16.8 Surface preparation

17 **Gravure Product and Market** 04 Hours
17.1 Lamination
17.2 Stitching
17.3 Modern techniques
Reference Books

1 Gravure process and Technology
   GAA

2 Printing Technology
   J. Michael Adams

3 Graphic Arts Photography
   Black & White

4 Gravure Primer
   Cheryl L. Kasunich GATF
PRACTICALS (96 Hours)

1. Introduction to Gravure Department
2. Introduction to Safety Measure
3. Introduction to Fire Extinguisher equipment
4. Introduction about Gravure Original and Positive
5. Gravure machine specifications
6. Depositing tank and its working
7. Gravure cylinder making by Chemical Method
8. Gravure cylinder making by Mechanical Method
9. Mounting the image carrier cylinder on Gravure machine
10. Practice of loading and unloading the web on Gravure machine
11. Practice of web joints on Gravure machine
12. Practice of setting the substrate from unwinding to winding unit
13. Practice of Doctor blade changing
14. Practice of image carrier cylinder changing
15. Practice of inking system settings
16. Practice of viscosity control and its checking
17. Practice of impression roller setting and its checking
18. Practice of drying unit setting and its checking
19. Make ready procedure for monochrome jobs
20. Storage of equipments and materials
Instructional Objectives

1 Understand Introduction of Gravure
   1.1 Major methods of printing
   1.2 Comparing printing method
   1.3 Invention of gravure
   1.4 Basic theory of Gravure
   1.5 History of Gravure

2 Understand Gravure Work Flow
   2.1 Kinds of work flow
   2.2 Original, negative and positive characteristics
   2.3 Reproduction photography for Gravure

3 Understand Gravure Image Carrier Cylinder
   3.1 Parts of cylinder
   3.2 Cylinder bases
   3.3 Base materials
   3.4 Base specification
   3.5 Balancing

4 Understand Electroplating
   4.1 Electrochemistry
   4.2 Depositing tank
   4.3 Design of depositing tank
   4.4 Electro-plating kinds
   4.5 Dechroming

5 Understand Methods of Cylinder Preparation
   5.1 Diffusion etch
   5.2 Direct transfer
   5.3 Electromechanical

6 Understand Personal & Press Room Safety
   6.1 Personal safety
   6.2 Machine safety
   6.3 Press Room safety
   6.4 Electric safety
   6.5 Fire safety
   6.6 Fire Extinguisher
   6.7 Food packaging

7 Understand Storage of Equipment & Material
   7.1 Store and its importance
   7.2 Store maintenance
7.3 Record keeping
7.4 Store of equipment
7.5 Storage of materials

8 Understand Proof and Proofing Press
8.1 Proofs for Gravure
8.2 Types of Proofing
8.3 Proofing Process
8.4 Gravure Proofing Press

9 Understand Gravure Press & Components
9.1 Principle of Gravure Machine
9.2 Main parts of Gravure Machine
9.3 Types of Gravure Machine
9.4 Modern trends & Developments

10 Understand Web Handling
10.1 Web Arrangement
10.2 Register control
10.3 Real stands
10.4 Tension control
10.5 Troubleshooting

11 Understand Gravure Inks & Inking Systems
11.1 Types of inking system
11.2 Characteristics of Gravure inks
11.3 Viscosity
11.4 Factors which effects viscosity
11.5 Troubleshooting

12 Understand Gravure Inks Dryers
12.1 Need of ink dryers
12.2 Solvent removal
12.3 Dryer functioning
12.4 Drying methods
12.5 Troubleshooting

13 Understand Gravure Doctor Blade
13.1 Importance of Doctor Blade
13.2 Types of Doctor Blade
13.3 Doctor Blade Assembly
13.4 Doctor Blade Angle and Pressure
13.5 Troubleshooting

14 Understand Impression Roller
14.1 Function of Impression Roller
14.2 Impression Roller Covering
14.3 Impression Roller Hardness
14.4 Durometer Gauge
14.5 Impression mechanisms
14.6 Checking width of Impression Nip area
14.7 Troubleshooting

15 Understand Press Operations
15.1 Make ready of machine
15.2 Setting the cylinder and ink
15.3 Setting the impression and drying unit
15.4 Registration
15.5 Surface and reverse printing
15.6 Troubleshooting

16 Understand Gravure Substrates
16.1 Main kinds of substrates
16.2 Paper
16.3 Boards
16.4 Corrugated boards
16.5 Plastic film (Tin)
16.6 Foils
16.7 Laminator
16.8 Surface preparation

17 Understand Gravure Product and Market
17.1 Lamination
17.2 Stitching
17.3 Modern techniques
AIM: -
The aim of this course is to enable the student to handle the printing machine make ready procedure, registration, different printing problems, seating the machine system material used for printing quality control and color management

<table>
<thead>
<tr>
<th>COURSE CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Printing Unit</strong></td>
</tr>
</tbody>
</table>
| 1.1 Plate, blanket impression cylinder &nbsp;&n...
6.1 Three point register control
6.2 Ink feed system
6.3 Sheet transfer system

7 **Delivery System** 04 Hours
7.1 Types of delivery system
7.2 Chain delivery system importance and advantage
7.3 Delivery devices and controlling sheet delivery
7.4 Delivery assist devices

8 **Make Ready Procedure** 05 Hours
8.1 Outline procedure and initial preparation
8.2 Setting the sheet handling and control mechanisms
8.3 Preparing the printing unit
8.4 Making trial impressions and producing the “PASS” sheet

9 **Maintaining Uniform Quality** 06 Hours
9.1 Understanding quality control
9.2 Colour sequence in multi-colour operations
9.3 Densitometry
9.4 Process optimization devices for sheet fed press
9.5 Production control with test images

10 **Paper** 06 Hours
10.1 Paper composition
10.2 Manufacturing
10.3 Paper properties
10.4 Paper handling in press room

11 **Offset Problem solving** 06 Hours
11.1 Problem relating to paper
11.2 Problem relating Ink
11.3 Problem relating Press
11.4 Common printing problems

12 **Ink** 06 Hours
12.1 Ink manufacturing
12.2 Drying of sheet fed ink
12.3 Optical properties of ink
12.4 Working properties of ink
12.5 Colour matching and ink handling on the press

13 **Remote Control Measurement and Control Technology** 06 Hours
<table>
<thead>
<tr>
<th>System</th>
<th>Press remote control console</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ink feed preset system</td>
</tr>
<tr>
<td></td>
<td>Colour Quality colour measurement and control system</td>
</tr>
</tbody>
</table>

**Books Recommended:**

1. Sheet fed offset press operating loged P. Dejidas, Jr. and tomas M. destree
2. Hand book of print media
   Helmut kipphom
   Heidelberg
3. Printing Technology
   J.Michael Adams
   Penny Ann Dolin
4. A manual for lithographic press operation
   By A.S Porter M.I.O.P
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demonstration on an offset machine, working of different parts.</td>
</tr>
<tr>
<td>2</td>
<td>Mount the plate on the press.</td>
</tr>
<tr>
<td>3</td>
<td>Setting of three main cylinders.</td>
</tr>
<tr>
<td>4</td>
<td>Setting and adjustment of dampening rollers.</td>
</tr>
<tr>
<td>5</td>
<td>Setting different stocks of paper for registration.</td>
</tr>
<tr>
<td>6</td>
<td>Pulling out the impression on different kinds of paper to check the tone reproduction.</td>
</tr>
<tr>
<td>7</td>
<td>Printing a single colour job on a single colour machine</td>
</tr>
<tr>
<td>8</td>
<td>Setting the inking form rollers</td>
</tr>
<tr>
<td>9</td>
<td>Setting the feeder</td>
</tr>
<tr>
<td>10</td>
<td>Setting the registering devices on the register board.</td>
</tr>
<tr>
<td>11</td>
<td>Setting the delivery system</td>
</tr>
<tr>
<td>12</td>
<td>Increase or decrease the image length by altering the cylinder circumference</td>
</tr>
<tr>
<td>13</td>
<td>Mix more than one colour to get the required colour</td>
</tr>
<tr>
<td>14</td>
<td>Cleaning the inking and dampening system after printing</td>
</tr>
<tr>
<td>15</td>
<td>Preparing an offset machine for light colour, after a dark colour</td>
</tr>
<tr>
<td>16</td>
<td>Methods of oiling greasing and cleaning the machine</td>
</tr>
</tbody>
</table>
INSTRUCTIONAL OBJECTIVES

1 Printing Unit
1.1 Explain Plate, blanket impression cylinder
1.2 Explain Cylinder setting bearer contact pressure
1.3 Define Cylinder setting on non bearer contact pressure
1.4 Define Cylinder low spot
1.5 Define Cylinder packing material, determination of proper packing
1.6 Describe Print length adjustment

2 Inking System
2.1 Define Important function of inking system
2.2 Describe Types of inking system
2.3 Define Setting of roller flow of ink
2.4 Explain Wash up concerns and maintenance of system
2.5 Explain Inking system problems

3 Dampening System
3.1 Describe Different dampening system
3.2 Explain Setting of dampening rollers pressure
3.3 Describe Dampening system maintenance
3.4 Describe Dampening system recirculation and refrigeration system
3.5 Describe Operating problems

4 Press Dampening Solution
4.1 Explain Basic function of dampening solution
4.2 Describe Dampening solution ingredients
4.3 Describe PH and conductivity
4.4 Explain Water Quality

5 Feeder System
5.1 Explain Types of feeder
5.2 Define sheet control on pile table
5.3 Define sheet control on feed board

6 Register and Sheet Transfer
6.1 Explain Three point register control
6.2 Explain Ink feed system
6.3 Describe Sheet transfer system

7 Delivery System
7.1 Explain Types of delivery system
7.2 Explain Chain delivery system importance and advantage
7.3 Define Delivery devices and controlling sheet delivery
7.4 Define Delivery assist devices

8 Make Ready Procedure
8.1 Explain Outline procedure and initial preparation
8.2 Define Setting the sheet handling and control mechanisms
8.3 Define Preparing the printing unit
8.4 Define Making trial impressions and producing the “PASS” sheet

9 Maintaining Uniform Quality
9.1 Explain Understanding quality control
9.2 Explain Colour sequence in multi-colour operations
9.3 Explain Densitometry
9.4 Describe Process optimization devices for sheet fed press
9.5 Describe Production control with test images

10 Paper
10.1 Explain Paper composition
10.2 Explain Manufacturing
10.3 Describe Paper properties
10.4 Describe Paper handling in press room

11 Offset Problem solving
11.1 Explain Problem relating to paper
11.2 Describe problems relating to Ink
11.3 Describe problems relating to Press
11.4 Describe Common printing problems

12 Ink
12.1 Explain Ink manufacturing
12.2 Explain Drying of sheet fed ink
12.3 Define Optical properties of ink
12.4 Define Working properties of ink
12.5 Describe Colour matching and ink handling on the press

13 Remote Control Measurement and Control Technology / System
13.1 Explain Press remote control console
13.2 Explain Ink feed preset system
13.3 Explain Colour Quality colour measurement and control system
Total Contact Hours:
Theory: 32
Practical: 96

AIMS:
The aim of this subject is to enable students to develop skill and attitude to handle and work on Flexographic machines.

COURSE CONTENTS

1 INTRODUCTION OF FLEXOGRAPHY 3 HOURS

1.1 Principles of flexography.
1.2 Characteristics of material that can be printed by flexography.
1.3 Comparison of flexography with other printing processes.

2 DIFFERENT TYPES OF PRINTING PLATES 4 HOURS

2.1 Rubber stereos.
2.2 Photo polymer plates and their types.
2.3 Care and storage of flexo printing plates.
2.3 Advantages and disadvantages of rubber and photopolymer plates.

3 FLEXO-PLATE MAKING 3 HOURS

3.1 Rubber plate making.
3.2 Sheet Photo polymer plate making.
3.3 Liquid Photo polymer plate making.
3.4 Computerized Digital Imaging (C.D.I).

4 FLEXO-PLATE MOUNTING 3 HOURS

4.1 Manual Stereo mounting.
4.2 Plate mounting with help of mounting machines.
4.3 Proofing.
4.4 Mounting of multicolour jobs.
4.5 Problems in plate making and mounting, their causes and remedies.

5 TYPES OF FLEXOGRAPHIC PRESSES 4 HOURS

5.1 Stack type machine.
5.2 Central impression/ drum type machine.
5.3 Inline machine.
5.4 Concept of Narrow web machines and Wide web machines.
5.5 Modern trends and developments.
6 MAIN PARTS OF FLEXOGRAPHIC MACHINES 2 HOURS

6.1 Unwind or in feed section.
6.2 Printing section.
6.3 Drying section.
6.4 Rewind or out feed section.
6.5 Anilox roller and its types.
6.6 Plate cylinder and its selection.
6.7 Other parts of flexographic machine

7 PRESS OPERATIONS 3 HOURS

7.1 Make ready of machine.
7.2 Techniques for reverse printing and perfecting.
7.3 Crona treatment.
7.4 Die-cutting and half die-cutting.

8 FLEXOGRAPHIC INKS 4 HOURS

8.1 Characteristics of flexographic inks
8.2 Types of flexo inks
8.3 Ingredients of ink.
8.4 Ink drying methods.
8.5 Matching ink to the job.
8.6 Causes and remedies of different troubles; e.g. blocking, brittleness, drying too fast, drying too slow, feathering, foaming, filling, halo, ink heavy, ink week, ink melting, etc.

9 DIFFERENT TYPES OF SUBSTRATES 4 HOURS

9.1 Flexography and packaging.
9.2 Paper and paper boards.
9.3 Corrugated board.
9.4 Polyethylene and other films.
9.5 Foils.
9.6 Self adhesive labels.
9.7 Cloth labels.
9.8 Plastic tubes and cups.
9.9 Laminates.

10 QUALITY CONTROL 2 HOURS

10.1 Importance of quality assurance.
10.2 Quality control steps.

Books Recommended:
2. Graphic Arts Fundamentals.
1. Introduction to flexographic (workshop) department machinery and instruments used in shop.
2. Introduction to safety measures.
3. Learning the operation of hydraulic press and practice of preparing rubber stereos.
4. Preparing photo polymer plates.
5. Computerized digital imagining (CDI) machine operating.
6. Manually mounting the stereos.
7. Mounting the stereos with help of mounting machine.
8. Pulling proof of mounted stereo
9. Learning the operation of flexo machines.
10. Installing the plate cylinders on press.
11. Practice of loading and unloading the web on press.
12. Practice of changing the reel on the press.
13. Practice of make ready of machine.
14. Practice of setting the paper from unwinding of rewinding roll.
15. Running the paper on the press and setting the lays.
16. Belting the impression and checking the registration,
17. Setting of machine for perfecting.
18. Running the machine and practice of printing on paper.
19. Setting the machine for printing aluminum foil.
20. Learning the process of crona treatment
INSTRUCTIONAL OBJECTIVES

1. Understand The Importance And Principles Ok Flexography
   1.1 Define the principles of flexography.
   1.2 Explain characteristics of materials that can be printed by flexography.
   1.3 Compare the advantages and disadvantages of flexography with other printing processes.

2. Understand The Different Types Of Flexographic Plates
   2.1 Discuss the rubber plate,
   2.2 Describe the Photo-polymer plates their types and sizes.
   2.3 Compare the advantages and disadvantages of rubber and Photo-polymer plates.

3. Understand The Plate Making Process
   3.1 Enlist machines and equipments used for flexographic plate making.
   3.2 Explain the PROCESS of rubber stereo making.
   3.3 Explain the process of photopolymer plate making.
   3.4 Understand the computerized digital imaging (C.D.I) process.

4. Understand The Plate Mounting Process
   4.1 Explain the manual stereo mounting process.
   4.2 Explain the stereo mounting process (with help of mounting machine).
   4.3 Discuss proofing.
   4.4 Discuss mounting of multi colour jobs
   4.5 Discuss problems in plate making and mounting, their causes and remedies.

5. Understand The Types Of Flexographic Presses
   5.1 Discuss stack type presses.
   5.2 Discuss central impression/ drum type presses.
   5.3 Discuss in-line presses.
   5.4 Explain the concept of narrow web machines and wide web machines.
   5.5 Discuss modem trends and developments in flexo printing machines.

6. Understand The Main Parts Of Flexographic Machines
   6.1 Understand feeding systems and their setting.
   6.2 Discuss the operation the printing section.
   6.3 Explain the function of drying section.
   6.4 Explain rewinding section.
   6.5 Choose and set amnilox rollers.
   6.6 Discuss and select proper plate cylinder.
   6.7 Discuss the other main parts of flexographic machines.
7. Understand The Press Operations Of Flexographic Machines

7.1 Explain make ready of machine.
7.2 Explain techniques for reverse printing and perfecting.
7.3 Define Crona treatment.
7.4 Explain die cutting and half die cutting.

8. Understand The Properties Of Flexographic Inks

8.1 Explain the characteristics of flexographic inks.
8.2 Explain different types of inks.
8.3 Discuss the ingredients of inks.
8.4 Discuss the ink drying methods.
8.5 Match ink to the job.
8.6 Explain the causes and remedies of different troubles regarding ink.

9. Understand Different Types Of Substrates

9.1 Explain the relation between flexography and packaging.
9.2 Explain different types of papers and paper boards.
9.3 Discuss corrugated board.
9.4 Explain polyethylene and other types of films used for printing.
9.5 Discuss foils.
9.6 Explain self adhesive labels.
9.7 Explain different types of cloth labels
9.8 Discuss different types of tubes and cups.
9.9 Discuss a laminates.

10. Understand the importance of quality assurance.

10.1 Discuss the importance of quality assurance.
10.2 Explain the different quality control steps.
## PRINT FINISHING & BOOK BINDING

PGA 334

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

**AIM:-**  
This course is introduced to impart theoretical and practical knowledge of Print Finishing and Book Binding and other related techniques and the students are made familiar with the use of all types of tools and machines used in the Print Finishing & Book Binding.

### COURSE CONTENTS

<table>
<thead>
<tr>
<th></th>
<th>Introduction to Print finishing and book binding</th>
<th>04 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.1 Definition of Print Finishing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Definition of Book Binding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 History of Book Binding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 Layout of Book Binding Shop</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Technical Terms used in Print Finishing and Book Binding</th>
<th>05 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2.1 Signature and signature marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.2 Collating and Collating marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 Gathering and Insetting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Registration marks &amp; Eyeletting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.5 Blind Blocking and Foil Blocking</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Materials used in Book Binding</th>
<th>05 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3.1 Leathers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2 Cloths</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3 Rexin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.4 Threads</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.5 Boards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.6 Papers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.7 Adhesives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.8 Web Tapes &amp; Cords</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.9 Eyelets and Metal Concerns</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Introduction to Tools Used in Book Binding</th>
<th>05 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4.1 Iron hammer &amp; Bodkin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2 Hand paper cutter &amp; scissors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.3 Carpenter square &amp; saw</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.4 Shoemaker tools and finishing tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.5 Hollow punch and swaging tool</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.6 Needle and plassi</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Styles of Book Binding</th>
<th>04 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.1 Quarter Binding
5.2 Half Binding
5.3 Full Binding
5.4 Flush Binding

6 Types of Book Binding 05 Hours
6.1 Stationary Binding
6.2 Letter press Binding
6.3 Loose leaf Binding
6.4 Mechanical Binding
6.5 Perfect Binding and Brochures
6.6 Leather Binding
6.7 Cloth Binding
6.8 Rexin Binding
6.9 Morocco paper Binding

7 Sequence of Operations in Binding Books 03 Hours
7.1 New Book
7.2 An old Book

8 Introduction to End Papers 04 Hours
8.1 Single end paper
8.2 Double end paper

9 Methods of Decorating the Book Case 04 Hours
9.1 Lettering
9.2 Tooling
9.3 Panneling

10 Methods of Decorating the Edges of A Book 04 Hours
10.1 Colouring
10.2 Marbeling
10.3 Edge Gilding

11 Introduction to Machines Used in Print Finishing and Book Binding 05 Hours
11.1 Guillotine machine
11.2 Folding and Gathering machine
11.3 Blocking machine and gum binding machine
11.4 Sewing machine and stitching machine
11.5 Perforating and Ruling machine
11.6 Die cutting machine
11.7 Case maker machine
11.8 Nipping press and backing press

12 Safety Precautions in Print Finishing and Book Binding Department 03 Hours
<table>
<thead>
<tr>
<th></th>
<th>Introduction Bags</th>
<th>04 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Flate bag</td>
<td></td>
</tr>
<tr>
<td>13.1</td>
<td>Flate bag with side fold</td>
<td></td>
</tr>
<tr>
<td>13.3</td>
<td>Cross button bag</td>
<td></td>
</tr>
<tr>
<td>13.4</td>
<td>Block bottomed bag</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Introduction to Boxes</td>
<td>04 Hours</td>
</tr>
<tr>
<td>14.1</td>
<td>Folding box</td>
<td></td>
</tr>
<tr>
<td>14.2</td>
<td>Boxes with fold up lids</td>
<td></td>
</tr>
<tr>
<td>14.3</td>
<td>Turning box</td>
<td></td>
</tr>
<tr>
<td>14.4</td>
<td>Sliding box</td>
<td></td>
</tr>
<tr>
<td>14.5</td>
<td>Sheath box</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Introduction to Estimating</td>
<td>05 Hours</td>
</tr>
<tr>
<td>15.1</td>
<td>Cost of Binding materials</td>
<td></td>
</tr>
<tr>
<td>15.2</td>
<td>Cost of labour and other operations</td>
<td></td>
</tr>
<tr>
<td>15.3</td>
<td>Office expenses</td>
<td></td>
</tr>
</tbody>
</table>

**REFERENCE BOOKS**

1. Book Binding by Axther W. John Son
2. Introducing Book Binding by Ivor Robinson
3. Introduction to Book Binding by Shahid Ishaq
4. New Direction in Book Binding by Philip Smith
5. The practical guide to Craft Book Binding by Thames and Hudson
6. Basic Book Binding by A. W. Lewis
7. The Craft of Book Binding by Eric Burdett
8. Book Binding and the care of Books by Cocknell
9. The Evolution of Book Binding by G. W. Woodson
10. Book Binding by Jeff Clements
11. Hand book of Print Media by Helmut Kipphan
<table>
<thead>
<tr>
<th></th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demonstration of safety measures to avoid hazards in Print Finishing and Book Binding Department.</td>
</tr>
<tr>
<td>2</td>
<td>Folding of Printed sheets with bone folder stick and folding machines.</td>
</tr>
<tr>
<td>3</td>
<td>Preparation of floor paste</td>
</tr>
<tr>
<td>4</td>
<td>Different types of sewing</td>
</tr>
<tr>
<td>5</td>
<td>Making of single end paper and double end paper</td>
</tr>
<tr>
<td>6</td>
<td>Binding of books in quarter, half and full style.</td>
</tr>
<tr>
<td>7</td>
<td>Decorating of book case with leathering, tooling and paneling.</td>
</tr>
<tr>
<td>8</td>
<td>Decorating the edges of book with coloring, marbling and edge gilding.</td>
</tr>
<tr>
<td>9</td>
<td>Making a book with punch and binder machine.</td>
</tr>
<tr>
<td>10</td>
<td>Changing and adjusting the knife of guillotine machine.</td>
</tr>
<tr>
<td>11</td>
<td>Making a gum pad and perforated pad.</td>
</tr>
<tr>
<td>12</td>
<td>Making a duplicate and triplicate cash memo.</td>
</tr>
<tr>
<td>13</td>
<td>Making a new book.</td>
</tr>
<tr>
<td>14</td>
<td>Renovating an old book.</td>
</tr>
<tr>
<td>15</td>
<td>Making different types of bags.</td>
</tr>
<tr>
<td>16</td>
<td>Making different types of boxes.</td>
</tr>
<tr>
<td>17</td>
<td>Prepare an estimate of 100 books in quarter.</td>
</tr>
<tr>
<td>18</td>
<td>Draw a layout of book binding shop.</td>
</tr>
</tbody>
</table>
## INSTRUCTIONAL OBJECTIVES

<table>
<thead>
<tr>
<th></th>
<th>Understand Introduction to Print finishing and book binding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Define Print Finishing</td>
</tr>
<tr>
<td></td>
<td>Define Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain History of Book Binding</td>
</tr>
<tr>
<td></td>
<td>Describe Layout of Book Binding Shop</td>
</tr>
<tr>
<td>2</td>
<td>Understand Technical Terms used in Print Finishing and Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain Signature and signature marks</td>
</tr>
<tr>
<td></td>
<td>Describe Collating and Collating marks</td>
</tr>
<tr>
<td></td>
<td>Explain Gathering and Inselting</td>
</tr>
<tr>
<td></td>
<td>Explain Registration marks &amp; Eyeletting</td>
</tr>
<tr>
<td></td>
<td>Define Blind Blocking and Foil Blocking</td>
</tr>
<tr>
<td>3</td>
<td>Understand Materials used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain kind of Leathers</td>
</tr>
<tr>
<td></td>
<td>Describe Cloths used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain Rexin used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain Threads used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Describe Boards</td>
</tr>
<tr>
<td></td>
<td>Describe Papers used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain Adhesives</td>
</tr>
<tr>
<td></td>
<td>Explain uses of Web Tapes &amp; Cords</td>
</tr>
<tr>
<td></td>
<td>Explain Eyelets and Metal Concerns</td>
</tr>
<tr>
<td>4</td>
<td>Understand Introduction to Tools Used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Enlist the tolls used in Book Binding</td>
</tr>
<tr>
<td></td>
<td>Describe the function of each tool.</td>
</tr>
<tr>
<td></td>
<td>Make diagram of tools used in Book Binding.</td>
</tr>
<tr>
<td>5</td>
<td>Understand Styles of Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain styles of Book Binding</td>
</tr>
<tr>
<td></td>
<td>Describe the functions of each style</td>
</tr>
<tr>
<td></td>
<td>Describe the advantages and disadvantages of each style</td>
</tr>
<tr>
<td>6</td>
<td>Understand Types of Book Binding</td>
</tr>
<tr>
<td></td>
<td>Explain the methods of Book Binding</td>
</tr>
<tr>
<td></td>
<td>Enlist the branches of each method.</td>
</tr>
<tr>
<td></td>
<td>Define the branches of each method.</td>
</tr>
<tr>
<td>7</td>
<td>Understand the Sequence of Operations in Binding Books</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>7.1</td>
<td>Explain the steps of binding a new book.</td>
</tr>
<tr>
<td>7.2</td>
<td>Explain the steps of binding old book.</td>
</tr>
<tr>
<td>8</td>
<td>Understand the Introduction to End Papers</td>
</tr>
<tr>
<td>8.1</td>
<td>Enlist the kinds of end papers</td>
</tr>
<tr>
<td>8.2</td>
<td>Explain the functions of end papers</td>
</tr>
<tr>
<td>8.3</td>
<td>Describe the characteristics of end papers</td>
</tr>
<tr>
<td>9</td>
<td>Understand the Methods of Decorating the Book Case</td>
</tr>
<tr>
<td>9.1</td>
<td>Explain Lettering</td>
</tr>
<tr>
<td>9.2</td>
<td>Describe Tooling</td>
</tr>
<tr>
<td>9.3</td>
<td>Define Paneling</td>
</tr>
<tr>
<td>10</td>
<td>Understand the Methods of Decorating the Edges of A Book</td>
</tr>
<tr>
<td>10.1</td>
<td>Describe the function of decorating the edges of Books</td>
</tr>
<tr>
<td>10.2</td>
<td>Enlist the methods of marbling</td>
</tr>
<tr>
<td>10.3</td>
<td>Explain the methods of decorating the edges of books.</td>
</tr>
<tr>
<td>11</td>
<td>Understand the Introduction to Machines Used in Print Finishing and Book Binding</td>
</tr>
<tr>
<td>11.1</td>
<td>Enlist the kinds of machine used in book binding</td>
</tr>
<tr>
<td>11.2</td>
<td>Explain the function of each machine</td>
</tr>
<tr>
<td>11.3</td>
<td>State safety measures while operating the machines</td>
</tr>
<tr>
<td>12</td>
<td>Understand Safety Precautions in Print Finishing and Book Binding Department</td>
</tr>
<tr>
<td></td>
<td>Explain the safety precautions associated with Print Finishing workshop</td>
</tr>
<tr>
<td>13</td>
<td>Understanding Introduction Bags</td>
</tr>
<tr>
<td>13.1</td>
<td>Explain the kinds of bags</td>
</tr>
<tr>
<td>13.2</td>
<td>Explain the material used for different types of bags</td>
</tr>
<tr>
<td>14</td>
<td>Understanding Introduction to Boxes</td>
</tr>
<tr>
<td>14.1</td>
<td>Explain the different types of boxes</td>
</tr>
<tr>
<td>14.2</td>
<td>Enlist the material used for different types of boxes</td>
</tr>
<tr>
<td>15</td>
<td>Understand Introduction to Estimating</td>
</tr>
<tr>
<td>15.1</td>
<td>Explain the procedure of estimating</td>
</tr>
<tr>
<td>15.2</td>
<td>Calculate the cost of binding materials</td>
</tr>
<tr>
<td>15.3</td>
<td>Calculate the cost of folding and sewing</td>
</tr>
<tr>
<td>15.4</td>
<td>Calculate the office expenses</td>
</tr>
</tbody>
</table>
AIMS
This is the continuation of Graphic Design – II and the purpose is to equip the students with theoretical as well as practical aspects of Advance Digital and Electronic Pre-Press Tools in Graphic Design and their relation to printing technology.

COURSE CONTENTS

1. Mini Project: Pre-Press Of Office Stationary
   1.1 Letter Head, Envelope   03 Hours
   1.2 Visiting Card, Invoice   03 Hours
   1.3 File Cover, Folder   04 Hours
   1.4 Paper Holder   02 Hours

2. Final Project: Pre-Press Of Complete Advertising Campaign
   2.1 Poster   04 Hours
   2.2 Boucher & Leaf let   03 Hours
   2.3 Catalogue   03 Hours
   2.4 Wall and Table Calendar   05 Hours
   2.5 Diary   05 Hours

Books Recommended
1 What is graphic design? Quentin Network
   Essential design Hand Book
8 The ABC’s of typography By Sandra B. Ernst
9 The complete guide & digital graphic design Thames & Hudson
10 An introduction to Art Technologies
   Reg Smith, Michael Wright, James Horton
5 Graphic design school
   The Principles and practices of graphic design
   David Dabner, Thames & Hudson
6 Packaging design, Bill Stewart
PRACTICALS  96 HOURS

1. Keenly Check the final Designs same size dummy before Printing
2. Font (Curve/Free Form)
3. Picture Mode Suitable for Printing (CMYK, Tiff etc.)
4. DPI for Tiff images (Minimum 300)
5. Registration Marks in Registration Color
   - Cutting, Creasing and Folding Marks
   - Die Cutting Drawing
   - Cut flash
6. Special Color
7. Grip Margin
8. Impression Quantity
9. Imposition and Pasting (Upping)
10. Overfill Print
11. Selection of Paper/Card
12. Output (Positive) Checking
13. Visits (Establish Printing Firms and Design Studio)
ESTIMATING FOR PRINTING

Code: PGA-351

T   P   C
1   0   1

AIM:-
The aim of the subject is to enable the students to understand the most modern methods of estimating for printing with special reference to estimation of pre-press cost, printing and post printing cost.

COURSE CONTENTS

1  Why Estimating is Necessary?  03 Hours
   1.1  New job
   1.2  Re print

2  Production Sequence  03 Hours
   2.1  Composing / art work design (source)
   2.2  Method of printing to be used
   2.3  Operation steps involved in the production of a particular job
   2.4  Final shape of the job required

3  General Procedure For Selling  03 Hours
   3.1  Effect of estimating on selling
   3.2  Use of proper sequence and size to increase selling

4  Working Environments  03 Hours
   4.1  Importance of Office location
   4.2  Use of proper tools and equipments

5  Printing Paper  04 Hours
   5.1  Standard paper and board sizes
   5.2  Special paper and board sizes
   5.3  International paper sizes
   5.4  Paper qualities required for specific job
   5.5  Qualities of paper required including wastage of different jobs
   5.6  Other printing surfaces / materials

6  Printing Inks  03 Hours
   6.1  The quantity of ink required for a job
   6.2  Variable factors in consumption of different kinds
   6.3  Wastage percentage for different jobs

7  Art Work and Copy Preparation  03 Hours
   7.1  Kind of art work required, hand made,
8 Computers For Printing Estimating and Management 04 Hours

8.1 Introduction of Computer
8.2 Computer Application in a printing company
8.3 Computer management system available to printers
8.4 Computer for estimating and management in printing

9 Estimating and Pricing For the Quick Printing 04 Hours

9.1 Introduction of the quick printing industry
9.2 Management skills for the quick printing
9.3 Estimating procedure and counter printing systems
9.4 Computer systems for the quick printer

10 Understand the Ordering Paper for Sheetfed Production 03 Hours

10.1 Estimating by weight
10.2 Estimating by size & sheet
10.3 Converting paper size from web to sheet

Recommended Books

1 Printing estimating
Principles and practical
Third editions
Philips Kent Ruggles
California Poly Technique State University

2 Printing Technology
Fifth Edition
J. Michael Adams, President
Fair Leighickinson University
Penny Ann dolin, Faculty
Arizona State University East

3 Sheetfed offset press operating
Third edition
By Lloyd P-Dejidas, Jr, and Thomas M. Destree America
Instructional Objectives

1 Understand why Estimating is Necessary?
   1.1 Describe New job
   1.2 Explain reprint

2 Understand Production Sequence
   2.1 Describe Composing / art work design (source)
   2.2 Explain Method of printing to be used
   2.3 Explain Operation steps involved in the production of a particular job
   2.4 Explain Final shape of the job required

3 Understand General Procedure For Selling
   3.1 Describe Effect of estimating on selling
   3.2 Explain use of proper sequence and size to increase selling

4 Understand Working Environments
   4.1 Explain Importance of Office location
   4.2 Describe Use of proper tools and equipments

5 Understand Printing Paper
   5.1 Explain Standard paper and board sizes
   5.2 Explain Special paper and board sizes
   5.3 Describe International paper sizes
   5.4 Describe Paper qualities required for specific job
   5.5 Describe Qualities of paper required including wastage of different jobs
   5.6 Explain Other printing surfaces / materials

6 Understand Printing Inks
   6.1 Describe the quantity of ink required for a job
   6.2 Explain variable factors in consumption of different kinds
   6.3 Explain Wastage percentage for different jobs

7 Understand Art Work and Copy Preparation
   7.1 Explain Kind of art work required, hand made, computer, photographic etc.

8 Understand Computers For Printing Estimating and Management
   8.1 Describe Introduction of Computer
   8.2 Explain Computer Application in a printing company
   8.3 Explain Computer management system available to printers
   8.4 Explain Computer for estimating and management in printing

9 Understand Estimating and Pricing For the Quick Printing
   9.1 Describe Introduction of the quick printing industry
   9.2 Explain Management skills for the quick printing
   9.3 Explain Estimating procedure and counter printing systems
9.4 Explain Computer systems for the quick printer

10 Understand the Ordering Paper for Sheetfed Production
   10.1 Explain Estimating by weight
   10.2 Explain Estimating by size & sheet
   10.3 Explain Converting paper size from web to sheet
Pht –341 Entrepreneurship

Total Contact Hours = 32 Hrs
Theory = 32 Hrs

Course Objective
1- Understanding the concept and elements of small business enterprise.
2- Apply the techniques for generating business ideas as well as for identifying and assessing business opportunities.
3- Understand the procedures required for establishing an enterprise.
4- Understand the procedures for assessing market and for selecting location for a small business.
5- Understand the importance of financial record keeping in a small business.
6- Develop business plan and evaluate it in real market situation.
7- Apply the concepts of Chemical / Pharmaceutical Engineering on planning, designing and layout of related technical projects.

Course Contents
1- Entrepreneurship and Management 4 Hr

1.1 The concept of entrepreneurship
1.2 Entrepreneurial style Vs Managerial style
1.3 Terminology used in entrepreneurship
1.4 Classification of business; difference between social and commercial business
1.5 Reasons for Entrepreneurship; importance in society, self employment, benefits & limitation, Importance of relations/links
1.6 Entrepreneurial motivation; setting goals and risk assessment.
1.7 Small enterprises; elements, ideas, motivation, resources, business plan etc.

2- Entrepreneurship and innovation 3 Hr

2.1 Creativity and innovation; creativity potential, techniques for developing creative abilities
2.2 Business ideas; resources of business ideas, collective thinking and creative thinking,
2.3 Risk involved in innovation
2.4 Identifying and assessing business opportunities

3- Entrepreneurs 5 Hr

3.1 Entrepreneurial characteristics
3.2 Assessment of entrepreneurial potential; assessment of individuals
3.3 Entrepreneurial Leadership: abilities for a successful businessman
3.4 Self discipline; check list for attaining self discipline
3.5 Decision making skills; steps for decision making, rating of decision making skills
3.6 Principles of negotiation; resolving business issues through negotiation

4- Establishment of An Enterprise 8 Hr
4.1 Market; Five ‘W’ of market, competitors, assessment of market size & demand
4.2 Business location; importance, selection of site
4.3 Legal forms of business; Proprietorship, Partnership, limited company, Cooperative, advantages & disadvantages
4.4 Costing of product; direct and indirect cost
4.5 Break even analysis: fixed and variable costs, calculating break even indicates & applications
4.6 Finance & sources of financing; equity financing & loan financing, initial capital & working capital estimation

5- Management of an Enterprise 8 Hr

5.1 Hiring and managing people; hiring procedures, term & condition of services and Job description etc.
5.2 Managing sales & supplies; characteristics of successful sales personals, importance of advertisement, life cycle of product, selection of supplies, work order, delivery & payment etc.
5.3 Management of capital; operating cycle concept, management of cash & stock etc.
5.4 Accounting and book keeping: cash book, balance sheet etc.
5.5 Income tax; income tax returns, computation of business income
5.6 Sales tax; basic scheme of sale tax, assessment of return etc

6- Business Plan 4 Hr

6.1 Purpose of business plan
6.2 Components of business plan; outline, process of writing business plan
6.3 Analysis of business plan: feasibility; breakeven point, evaluating problem in starting business
6.4 Standard business plan
Minimum Qualification of Teacher/ Instructor

- Masters in Fine Arts with 2 years relevant experience in teaching/industry

- Bachelors of Fine Arts. With 4-Years relevant experience in teaching/industry preferably in Graphic designing.

- DAE in Printing & Graphics Arts Technology with 6-Years’ relevant experience in teaching/industry
**Employability of the pass-outs/Graduates**

The pass outs of this course may find job / employment opportunities in the following areas / sectors:

- Printing/ Publishing Industry
- Central Govt. Presses, Provincial Govt. Presses, Autonomous Bodies Presses like Universities, Boards, Army, Railway, WAPDA, PIA, etc., Private Presses
- Screen Printing shop of materials.
- Specialized Screen Printing shop as own Business.
- Manufactures of Screen Printing machinery/equipment.
- Manufacturing firms of Offset Printing Machines
- Private plate making shops
- Advertisement agencies
- Self employment / Own Business as Entrepreneur
## CURRICULUM REVISION COMMITTEE

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name &amp; Designation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Dr. Tehseen Aslam</strong>&lt;br&gt;Ex-Chairperson, Department of Technology Education, University, Warden Home, Girls Hostel No.5, New Campus, Punjab University. Cell: 0302-4658075</td>
<td>Convener</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Mr. Ajmal Hussain Shah,</strong>&lt;br&gt;Chief Instructor, Govt. College of Technology for Printing &amp; Graphic Arts, Allama Iqbal Town (Near Science College Wahdat Road) Lahore Cell: 0300-4201514</td>
<td>Member</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Mr. Muhammad Ali,</strong> Sr. Instructor, Govt. College of Technology for Printing &amp; Graphic Arts, Allama Iqbal Town (Near Science College Wahdat Road) Lahore Cell: 0321-9499101</td>
<td>Member</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Mr. Ali Ahmed,</strong> Superintendent, Deptt. of Press &amp; Publication University of the Punjab, New Campus, Lahore 0300-4414924</td>
<td>Member</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Mr. Ahmed Raza,</strong>&lt;br&gt;Sr. Instructor, Govt. College, of Technology, Raiwind Road, Lahore, Cell: 0333-4254378</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td><strong>Mr. Bahauddin,</strong>&lt;br&gt;Sr. Instructor, Govt. College of Technology for Printing &amp; Graphic Arts, Allama Iqbal Town (Near Science College Wahdat Road) Lahore, Cell: 0322-4301986</td>
<td>Member</td>
</tr>
<tr>
<td>7.</td>
<td><strong>Mr. Yasin Saleem,</strong>&lt;br&gt;Production Manager, Vantage Printers, Address: 28, N-Gulberg Industrial area, Gulberg-II, Lahore Cell: 0301-8489007, 0333-4311028</td>
<td>Member</td>
</tr>
</tbody>
</table>