# CURRICULUM
## For
## THREE YEARS' DIPLOMA OF ASSOCIATE ENGINEER
## in

# Modern Textile Technology
### (CCTE-Joint Edu. (2+1) Sino-Pak Dual Diploma program)

Entry Level: -                                  Matriculation (Science)

Duration of Course: -                           Three Years

Credit Hours:                                   **70** (Annual System)

Methodology:                                    Theory 40%

                                                Practical 60%

Examination & Certification Body:    Punjab Board of Technical Education

Examination System:                  Annual System (same as other DAEs programs)

## Technical Education and Vocational Training Institution

# TEVTA

## SCHEME OF STUDIES

### 3-Years' DAE (2+1) in Modern Textile Technology

### Sino-Pak Joint Edu. Dual Diploma Programme

| Code | Subject Name | T | P | C | Taught by |
|---|---|---|---|---|---|
| **FIRST YEAR** | | | | | |
| GEN-111 | Islamiat & Pakistan Studies | 1 | 0 | 1 | GCT , Faisalabad |
| GenC-112 | Chinese Language-1 | 2 | 0 | 2 | Blended (online GCT , Faisalabad) |
| ENG-112 | English | 2 | 0 | 2 | GCT , Faisalabad |
| MATH-113 | Applied Mathematics-I | 3 | 0 | 3 | GCT , Faisalabad |
| CH-112 | Applied Chemistry | 1 | 3 | 2 | GCT , Faisalabad |
| PHY-122 | Applied Physics | 1 | 3 | 2 | GCT , Faisalabad |
| MT-142 | Basic Engineering Drawing | 1 | 3 | 2 | GCT , Faisalabad |
| TD-114 | Textile Fundamental | 4 | 0 | 4 | GCT , Faisalabad |
| TT-123 (Rev.) | Work Shop Practice | 0 | 6 | 2 | GCT , Faisalabad |
| COMP-152 | Computer Applications | 1 | 3 | 2 | GCT , Faisalabad |
| ELECT-112 | General Electricity & Electronics | 1 | 3 | 2 | GCT , Faisalabad |
| | **Total** | **17** | **21** | **24** | |
| **SECOND YEAR** | | | | | |
| Code | Subject Name | T | P | C | |
| GEN-201 | Islamiat & Pakistan Studies | 1 | 0 | 1 | GCT , Faisalabad |
| MATH-223 | Applied Mathematics-II | 3 | 0 | 3 | GCT , Faisalabad |
| GenC-212 | Chinese Language-2 | 2 | 0 | 2 | Blended (JCET, online GCT , Faisalabad) |
| MgmC-212 | Understanding China | 2 | 0 | 2 | Blended (JCET, online GCT , Faisalabad) |
| PHY-242 | Applied Mechanics | 1 | 3 | 2 | GCT , Faisalabad |
| MGM- 211 | Business Communication | 1 | 0 | 1 | GCT , Faisalabad |
| TD-242 | Yarn Formation | 1 | 3 | 2 | GCT , Faisalabad |
| TW-224 | Fabric Manufacturing Technology | 2 | 6 | 4 | GCT , Faisalabad |
| TD-235 | COLORATION-I | 3 | 6 | 5 | GCT , Faisalabad |
| MTT-212 | Introduction to Textile and Clothing | 2 | 0 | 2 | GCT , Faisalabad |
| | **Total** | **18** | **18** | **24** | |

| THIRD YEAR | | | | | |
|---|---|---|---|---|---|
| Code | Subject Name | T | P | C | Taught by |
| Gen-301 | Islamiat & Pakistan Studies | 1 | 0 | 1 | GCT-Taxila (Online) |
| MTT-312 | Testing of textile materials | 1 | 3 | 2 | JCET |
| MTT-322 | Textile Art and Art Design | 1 | 3 | 2 | JCET |
| MTT-333 | Spinning Process Flow and Practice | 2 | 3 | 3 | JCET |
| MTT-343 | Fabric Analysis and Sample Weaving | 2 | 3 | 3 | JCET |
| MTT-353 | Weaving Process Flow and Practice | 2 | 3 | 3 | JCET |
| MTT-362 | Dyeing and Finishing Process Practice | 1 | 3 | 2 | JCET |
| MTT-372 | Knitted Fabric Design and Weaving | 1 | 3 | 2 | JCET |
| MTT-382 | Clothing Cutting and Sewing | 1 | 3 | 2 | JCET |
| MTT-392 | Textile innovation project training | 0 | 6 | 2 | JCET |
| | Total | 12 | 30 | 22 | |

# 1st Year

| نی | ٹی | سی |
|----|----|----|
| 1 | 0 | 1 |

GEN III

حصہ اول اسلامیات

حصہ دوم مطالعہ پاکستان

**موضوعات** حصہ اول اسلامیات     سال اول     کل وقت: 20 گھنٹے

# کتاب و سنت

(1)   ## قرآن مجید

1۔ تعارف قرآن مجید 2۔ نزول قرآن 3۔ مکی و مدنی سورتوں کی خصوصیات 4۔ وحی کی اقسام 5۔ پندرہ منتخب آیات مع ترجمہ

1.1   لن تنالوا البر حتی تنفقوا مما تحبون

1.2   واعتصموا بحبل اللہ جمیعاً ولا تفرقو

1.3   ولا یجرمنکم شنان قوم علی ان لا تعدلوا

1.4   ان اللہ یامرکم ان تؤدوا الامانات الی اھلھا

1.5   ان اللہ یامر بالعدل والاحسان

1.6   ان الصلوٰۃ تنھی عن الفحشاء والمنکر

1.7   لقد کان لکم فی رسول اللہ اسوۃ حسنۃ

1.8   ان اکرمکم عند اللہ اتقاکم

1.9   وما آتاکم الرسول فخذوہ وما نھاکم عنہ فانتھوا

1.10   واوفوا بالعھد

1.11   وعاشروھن بالمعروف

1.12   یمحق اللہ الربوٰا ویربی الصدقات

1.13   واصبر علی ما اصابک

1.14   وقولوا قولا سدیدا

1.15   ان الدین عند اللہ الاسلام

(ب)   ## سنت

1۔   سنت کی اہمیت

2۔   دس منتخب احادیث مع ترجمہ و تشریح

1- اِنَّمَا الْاَعْمَالُ بِالنِّيَّاتِ

2- اَلْاَدَبِيَّةُ لَاُتِمَّمَ مَكَارِمَ الْاَخْلَاقِ

3- لَا يُؤْمِنُ اَحَدُكُمْ حَتَّى يُحِبَّ لِاَخِيهِ مَا يُحِبُّ لِنَفْسِهِ

4- اَلْمُسْلِمُ مَنْ سَلِمَ الْمُسْلِمُونَ مِنْ سَمِ الْمُسْلِمُونَ مِنْ لِسَانِهِ وَيَدِهِ

5- فَاِنْ اٰمَنْتَ بِاللّٰهِ سَلِمَ اَنْتَفِعُمْ

6- خَيْرُكُمْ خَيْرُكُمْ كَمْ ذَا اللّٰهُ

7- سِبَابُ الْمُسْلِمِ فُسُوقٌ وَقِتَالُهُ كُفْرٌ

8- اَلْمُؤْمِنُونَ اِخْوَةُ الْمُؤْمِنِ

9- كُلُّ الْمُسْلِمِ عَلَى الْمُسْلِمِ حَرَامٌ لَهُ دَمُهُ وَمَالُهُ وَعِرْقُهُ

10- اٰيَةُ الْمُنَافِقِ ثَلَاثَةٌ اِذَا حَدَّثَ كَذَبَ وَاِذَا وَعَدَ اَخْلَفَ وَاِذَا اؤْتُمِنَ خَانَ وَاِنَّهُ فَنَا خَلَقَ

دینِ اسلام

2.1 اسلام کے بنیادی عقائد کی وضاحت اور انسان کی انفرادی و اجتماعی زندگی پر ان کے اثرات

1- توحید

2- رسالت

3- آخرت

4- ملائکہ

5- آسمانی کتب

2.2 عبادات

1- نماز 2- روزہ 3- حج 4- زکواۃ

مندرجہ بالا عبادات کی اہمیت و فضیلت، حکمتیں اور انسان کی انفرادی و معاشرتی زندگی پر ان کے اثرات

حصہ اول

حصہ اسلامیات

## تدریسی مقاصد

## ۱- قرآن مجید

عمومی مقصد: طلاب علم یہ سمجھنے کے قابل ہو کہ اسلام کی تعلیمات کا اصل سرچشمہ قرآن مجید ہے

خصوصی مقاصد: طالب علم اس قابل ہو جائے گا کہ

☆ قرآن مجید کی تعریف کر سکے گا

☆ قرآن مجید کے نزول کی صورت بیان کر سکے

☆ قرآن مجید کی مکی و مدنی سورتوں کی پہچان کر سکے

☆ منتخب آیات کا ترجمہ و تشریح کر سکے

عمومی مقصد: یہ سمجھنے کے قابل ہو جائے کہ منتخب قرآنی آیات کے ذریعے اسلامی تعلیمات کا مفہوم کیا ہے

☆ قرآنی آیات کا ترجمہ تشریح کر سکے

☆ قرآنی تعلیمات کی روشنی میں اپنی اور معاشرتی اصلاح کر سکے

## ۲۔ سنت

عمومی مقصد: طالب علم سنت نبوی کی اہمیت اور ضرورت کو اچھی طرح سمجھنے کے قابل ہو جائے گا

خصوصی مقصد:

☆ سنت کی تعریف بیان کر سکے

☆ سنت کی اہمیت و ضرورت کی وضاحت کر سکے

☆ سنت کی روشنی میں اسوہ حسنہ پر عمل کر سکے

## ۳۔ منتخب احادیث نبویہ

عمومی مقصد: احادیث کی روشنی میں اخلاقی اقدار سے آگاہی حاصل کر سکے

خصوصی مقصد: احادیث کا ترجمہ و تشریح کر سکے

رسول اللہ ﷺ کے اسوہ حسنہ کا پیروکار کا مظاہرہ پیدا ہو سکے

دین اسلام

عمومی مقاصد : دین اسلامی کے بنیادی مقاصد اور عبادات کے بارے میں جان سکے اور بیان کر سکے

خصوصی مقاصد

لفظ دین اسلام کے لغوی اور اصطلاحی معنی بیان کر سکے

اسلام کے بنیادی مقاصد کی اہمیت بیان کر سکے

اسلام کے بنیادی مقاصد سے انسان کی انفرادی و اجتماعی زندگی پر پڑنے والے اثرات بیان کر سکے

عبادات کے لغتی و اصطلاحی معنی بیان کر سکے

عقیدے اور عبادت کا فرق بیان کر سکے

عبادات (نماز، روزہ، حج، زکواۃ) کے فوری احکامات اور انسانی زندگی پر ان کی اثرات بیان کر سکے

اسلامی مقاصد و عبادات کے مطابق اپنی زندگی ڈھال کر ایک اچھا مسلمان بن سکے

نصاب اخلاقیات سال اول

حصہ دوم مطالعہ پاکستان

GEN 101

| ک | ٹی | ف |
|---|---|---|
| 1 | 0 | 1 |

**موضوعات**

کل وقت ۲۰ گھنٹے

اخلاقیات کی تعریف اور اہمیت

اخلاقیات کا معیار (قانون، عقل، الہی کتب)

مندرجہ ذیل اخلاق کی وضاحت

☆ دیانت داری

☆ وفا داری

☆ نظم و ضبط

☆ راست گوئی

☆ صبر و استقلال

☆ حوصلہ مندی

☆ وقت کی پابندی

☆ ایثار

☆ اخوت

☆ باہمی احترام

☆ مصلحت

## تدریسی مقاصد

عمومی مقاصد : اعلیٰ اخلاق کی وجہ سے ملکی ترقی میں قابل قدر اضافہ کر سکے

خصوصی مقاصد بطالب اس علم سے اس قابل ہو گا کہ

- ☆ موضوعات کا مطلب بیان کر سکے
- ☆ عملی زندگی سے مثالوں کی نشاندہی کر سکے
- ☆ اپنی شخصیت اور معاشرے پر موضوعات کے مثبت اثرات پیدا کرنے کے طریقے بیان کر سکے
- ☆ وراثت داری کی اہمیت بیان کر سکے
- ☆ وفاداری کی اہمیت بیان کر سکے
- ☆ نظم و ضبط کی فضیلت بیان کر سکے
- ☆ صدق بیان کی ضرورت بیان کر سکے
- ☆ حوصلہ مندی کے فوائد بیان کر سکے
- ☆ وقت کی پابندی کے فائدہ بیان کر سکے
- ☆ صفائی اور باہمی اختیار سے حسن کارکردگی کو بیان کر سکے
- ☆ مصلحت کے فوائد بیان کر سکے

نصاب: (سال اول) (Term III)

حصہ دوم مضمون پاکستان کل وقت 12 گھنٹے

## موضوعات

۱: حرکت نمبر : مسلمان قوم میں آزادی کی فکری تاریخ ، معاشرے میں نظریاتی آزادی کی اہمیت اور ضرورت - زہنی و
جسمانی غلامی کے نقصانات

۲: نظریہ پاکستان

قیام پاکستان کی اساس (دو قومی اسلام) قیام پاکستان کی غرض و غایت نظریہ پاکستان کی وضاحت۔ نظریہ پاکستان اور علامہ
اقبال اور قائد اعظم کے ارشادات کی روشنی میں

۳: نظریہ پاکستان کا تاریخی پس منظر

مجدد الف ثانی اور شاہ ولی اللہ کی تبلیغی خدمات سید احمد شہید کی تحریک مجاہدین
تعلیمی تحریکیں

۴: علی گڑھ - ندوۃ العلماء (دیوبند) - مدرسۃ للاعلوم - (استدعا) اسلامیہ کالج (پشاور) انجمن حمایت اسلام (لاہور)

11

مطالعہ پاکستان (حصہ دانم)

تدریسی مقاصد

حریت فکر:

عمومی مقصد

طالب علم یہ جان لے کہ اسلام میں اور مسلمان قوم میں آزادی فکر کی کیا اہمیت ہے

خصوصی مقاصد

☆ حریت فکر کا معنی و مفہوم بیان کر سکے

☆ آزادی فکر کی اہمیت بیان کر سکے

☆ خصوصاً اسلام میں آزادی اظہار رائے کی اہمیت بیان کر سکے

☆ ذہنی غلامی کے قومی سطح پر نقصانات کے بیان کر سکے

☆ بے عملی غلامی قومی سطح پر نقصانات بیان کر سکے

نظریہ پاکستان

عمومی مقصد:

نظریہ پاکستان (دین اسلام) سے پوری طرح واقفیت ہو جائے

خصوصی مقاصد:

☆ نظریہ کی تعریف بیان کر سکے اور اس کی وضاحت کر سکے

☆ نظریہ پاکستان کی تعریف کر سکے اور اس کا مفہوم بیان کر سکے

☆ علامہ اقبال اور قائد اعظم کے فرمودات کی روشنی میں نظریہ پاکستان بیان کر سکے

نظریہ پاکستان کا تاریخی پہلو

عمومی مقصد

☆ نظریہ پاکستان کے تاریخی پس منظر سے واقفیت حاصل کر سکے

خصوصی مقاصد:

☆ محرکین قیام کے بارے میں بیان کر سکے

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| | |
|---|---|
| ۲۱ | محمد بن قاسم کے ہندوستان پر حملہ کی وجہ بیان کر سکے |
| ۲۲ | محمد بن قاسم کے ہندوستان پر حملہ کے اثرات بیان کر سکے |
| ۲۳ | بیان کر سکے کہ ہندوستان میں ہندو مسلم دو قومی نظریہ کا نکتہ آغاز کیا ہے |
| ۲۴ | مجدد الف ثانی کی علمی خدمات بیان کر سکے |
| ۲۵ | شاہ ولی اللہ کی علمی خدمات بیان کر سکے |
| ۲۶ | مجدد الف ثانی اور شاہ ولی اللہ نے جو تبلیغ دین اور مسلمانوں میں سیاسی شعور پیدا کیا اسے بیان کر سکے |

# علمی تحریکیں

عام ا مقصد

| | |
|---|---|
| ۲۷ | برصغیر کی علمی تحریکوں سے آگاہی حاصل کر سکے |

خصوصی مقصد:

| | |
|---|---|
| ۲۸ | علی گڑھ ۔ دیو بند ۔ ندوۃ العلماء مدرسۃ السلام ۔ اسلامیہ کالج ۔ انجمن حمایت اسلام نے تعلیم کے ذریعہ سیاسی شعور مسلمانوں میں پیدا کیا اسے بیان کر سکے |
| ۲۹ | آزادی ہند کے سلسلہ میں تحریک مجاہدین کی خدمات بیان کر سکے |

</div>

**Eng-112    ENGLISH**

**Total contact hours**

| | | T | P | C |
|---|---|---|---|---|
| **Theory** | **64** | **2** | **0** | **2** |
| **Practical** | **0** | | | |

**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.

**COURSE CONTENTS**

**ENGLISH PAPER "A"**

**1      PROSE/TEXT**                                                                                   **16 hours**
   1.1     First eight essays of Intermediate English Book-II

**2      CLOZE 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 words 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.

**ENGLISH 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 BOOKS**
   Technical English developed by Mr. Zia Sarwar, Mr. Habib-ur –Rehman, Evaluated by Mr.Zafar Iqbal Khokhar, Mr. Zahid Zahoor, 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.

**GenC-112**                     **Chinese Language- I**

**Total contact hours**
Theory              64                    T      P      C
Practical           0                     2      0      2

## PART ONE

**AIMS** This course consists of 18 classes (including mid-term test and final test). After completing this part, students can master the primary Chinese language knowledge taught in the content of the course, and be able to achieve and exceed the **HSK level One**.

**INSTRUCTION OBJECTIVE** The course is mainly for zero-based learners. Through the study of this course, learners can lay a solid language foundation and have a preliminary understanding of Chinese language structure, including Pinyin, Chinese characters, words, grammar and other knowledge. After completing this course, learners can understand and use some basic words and sentences, and complete the most basic communication, such as greeting, asking, introducing, shopping and so on.

## COURSE CONTENTS

1. **Lesson 1 Hello Vs Nǐhǎo**                                               **1 hour**
This lesson briefly introduces pinyin and spelling methods.
2. **Hello!**                                                                **1 hour**
This lesson briefly introduces the sentence patterns used in greeting, such as dialogue, greeting farewell, and introducing one's own name.
3. **Lesson 3 I am Britain**                                                 **2 hour**
Teach students to understand basic classroom language, learn to use "national + person" for simple communication dialogue, and introduce which country they come from.
4. **Lesson 4 What's the date today**                                        **2 hour**
This lesson introduces the expression of numbers, years, months, etc., and teaches students to ask about a date and answer it.
5. **Lesson 5 This is my brother**                                           **2 hours**
By introducing family members, students can understand the simple words when asking about family status and introduce them briefly.
6. **Lesson 6 I'm nineteen years old**                                       **2 hours**
This lesson expands quantifiers and animal names, and introduces the expression of age, so that students can ask and answer each other's age correctly.
7. **Lesson 7 What time is it**                                              **2 hours**
This lesson introduces the usage of hours, minutes and seconds, so that students can describe their lives with time points.
8. **Lesson 8 What do you like to do on weekends**                           **2 hours**
This lesson introduces the expressions of hobbies, interests, activities and other related nouns, so as to help students communicate with each other by using simple linking sentences.

**Semi-MID-TERM REVIEW**                                                     **2 hours**
Mid-term review is a summary of the knowledge learned in the past. The test paper uses the knowledge points learned in the past to design listening questions, answering questions by looking at pictures, connecting questions, filling in blanks, etc., which are illustrated with pictures and interesting, and can test students' learning effect.
9. **Lesson 9 Introduce yourself**                                          **2 hours**
Explain the related expressions related to self-introduction, and students can correctly introduce their

names, families, ages, hobbies, school majors, etc.    2

**10.Lesson 10 My father is in Beijing** **2 hours**
This lesson introduces the names of major cities in China, Britain and Europe, and introduces the use of "person + place" in sentences.

**11.Lesson 11 I came to Beijing by plane** **2 hours**
This lesson introduces the means of transportation and how to express long sentences in combination with the time and place learned before.

**12.Lesson 12 I eat at the company 2 hours** **2 hours**
This lesson introduces the polite expressions used in eating.

**13.Lesson 13 The weather is fine on Monday** **2 hours**
It shows the conversations and topics that may appear when you want to date.

**14.Lesson 14 How much is it altogether** **2 hours**
This lesson introduces the vocabulary and sentences commonly used in shopping, and how to use Chinese for daily shopping.

**15.Lesson 15 What would you like to have** **2 hours**
This lesson introduces the classic Chinese and Thai cuisine, the terms of treating guests, and the communicative terms of how to order food in restaurants.

**16.Lesson 16 The bathroom is next to the pantry** **2 hours**
This lesson introduces location and location words, and how to use location words to introduce the location of a place.

**Semi- FINAL REVIEW** **2 hours**
Similar to the mid-term test questions, it is a test of important knowledge points of the course to test students' learning effect.        This lesson briefly introduces pinyin and spelling methods.

**PART- TWO**

**AIMS** After completing this part, students can master the basic Chinese language knowledge taught in the content of the course, and be able to reach and exceed **HSK level TWO.**

**INSTRUCTION OBJECTIVE** Learners can master the language knowledge and use some basic grammar and sentence patterns in communication, learn to express personal feelings and attitudes in Chinese, and can complete communicative functions such as gratitude, apology, introduction and farewell, and begin to understand Chinese cultural knowledge and cultivate interest in learning.

**COURSE CONTENTS**

**1.  Lesson 1 I was still sleeping at 7 o'clock** **1 hour**
This lesson introduces the grammatical points of "still", so that students can correctly understand the meaning of sentences related to "still" and use this sentence pattern correctly for communication.

**2.  Lesson 2 It will be cloudy tomorrow** **1 hour**
By introducing the weather in several Chinese cities, explain how to use temperature to answer weather questions.

**3.  Lesson 3 That one is five hundred dollars cheaper than this one** **1 hour**
This lesson explains comparative sentences, and compares them in terms of price, height and temperature, so that students can understand comparative sentences thoroughly.

**4.  Lesson 4 This is a family photo** **1 hour**
This lesson introduces family members in detail through appearance, clothing and occupation, so that students can master more detailed description methods.

**5.  Lesson 5 It is forbidden to take pictures here** **2 hours**
This lesson leads students to understand the relevant knowledge points of expressing commands, such as forbidden and forbidden, so that students can correctly understand the meaning of words in daily life.

**6.  Lesson 6 I can't find something** **2 hours**
This lesson introduces the use of language points in "V + should + result complement", so that students can correctly use relevant sentence patterns in communication.

**7.  Lesson 7 I have been to Sichuan and seen pandas** **2 hours**

This lesson introduces Chinese culture through "V + have been to", such as the Great Wall, the Forbidden City, national treasures, etc., so that students can use this sentence pattern correctly in communication.

**8.  Lesson 8 I hope you can come to my wedding**                                    **2 hours**
By introducing Chinese weddings, this lesson enables students to master the verbal usage of banquet invitation, holiday blessing, emotional expression and euphemistic refusal.

**Semi-MID-TERM REVIEW**                                                             **2 hours**
This section leads students to review the knowledge points they have learned in the past and conduct mid-term tests through reading pictures, listening questions and connecting questions to test students' learning effect.

**9.  Lesson 9 Be ill, take more rest**                                              **2 hours**
This lesson introduces the vocabulary related to illness and the doctor's medication advice, so that students can correctly describe and understand the doctor's meaning in the process of seeing a doctor.

**10.Lesson 10 The station is just across the road**                                 **2 hours**
This lesson introduces the way of asking places and answers by asking directions, which helps students to use relevant sentence patterns for practical communication questions and answers.

**11.Lesson 11 She sings very well**                                                 **2 hours**
This lesson focuses on hobbies and introduces the correct use of related words in sentences.

**12.Lesson 12 Did you do well in the exam**                                         **2 hours**
By describing the examination process and the situation of answering questions, students can correctly understand the instructions of the examination room, the distribution of questions and the analysis of test paper problems

**13.Lesson 13 Buy two and get one free**                                            **2 hours**
This lesson introduces the commodity names of supermarkets, as well as common terms such as promotional activities, discounts and price reductions.

**14.Lesson 14 We're a new restaurant**                                              **2 hours**
This lesson helps students understand how to understand the waiter's recommendation and put forward the food requirements for ordering.

**15.Lesson 15 The girl is dressed in white clothes**                                **2 hours**
This lesson introduces others' clothes and how to use grammar points to describe the state of something through "V + be dressed in".

**16.Lesson 16 You can be discharged from hospital next week**                        **2 hours**
This lesson introduces a variety of expressions, such as hospitalization, visiting patients and discharge, so that students can understand the language of hospital scenes and strengthen their multi-scene communication ability.

        **Semi- FINAL REVIEW**                                                        **2 hours**
This section is similar to the mid-term review, which leads students to review the knowledge points they have learned in the past and conduct final tests by looking at pictures, listening questions, connecting questions, etc., to test students' learning effect.

**Recommended Book**
*Tang Chinese Course 1 for PART TWO*
*Tang Chinese Course 2 for PART TWO*

**Math-113    APPLIED MATHEMATICS-I**

| | | | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Total contact hours** | 96 | | | | |

**Total contact hours        96                                T    P    C**
**Theory:        96 Hrs                                          3    0    3**

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

**AIMS**  After completing the course the students will be able to
1. Solve problems of Algebra, Trigonometry, vectors.  Menstruation, 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.

**COURSE CONTENTS**

**1       QUADRATIC EQUATIONS                          6 Hrs**
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 Hrs**
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         3Hrs**
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 Hrs**
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 Hrs**
5.1     Introduction

**REFERENCE BOOKS**

Applied Mathematics Math-113, Developed by Nasir -ud-Din Mahmood, Sana-ullah Khan, Tahir Hameed, Evaluated by Syed Tanvir Haider, Javed Iqbal, Vol - I, National Book Foundation

**Math-113    APPLIED MATHEMATICS-I**

**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 discriminant
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 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 sins 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 MENSTRUATION IN FINDING SURFACES, VOLUMEAND WEIGHTS OF SOLIDS.**

10.1      Define menstruation 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 vector.
11.7 Deduce conditions of perpendicularly 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, ad joint 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 Crammers Rule for solving linear equations

**CH – 112    APPLIED CHEMISTRY**

| | | T | P | C |
|---|---|---|---|---|
| **Total Contact Hours 128** | | | | |
| **Theory** | **32 hours** | 1 | 3 | 2 |
| **Practical** | **96 hours** | | | |

**Pre-requisites:** The student must have studied the subject of elective chemistry at secondary school level.

## COURSE AIMS:

After studying this course a student will be able to:

1. Understand the significance and role of chemistry in the development of modern technology
2. Become acquired with the basic principles of chemistry as applied in the study of relevant technology.
3. Know the scientific methods for production, and use of materials of industrial & technological significance.
4. Gains skill for the efficient conduct of Practical in a chemistry lab.

## COURSE CONTENTS

**1. INTRODUCTION AND FUNDAMENTAL CONCEPTS          2 Hours**

1.1. Orientation with reference to this technology

1.2. Terms used & units of measurements in the study of chemistry

1.3. Chemical reactions & their types

**2.    ATOMIC STRUCTURE          2 Hours**

2.1 Sub atomic particles

2.2 Architecture of atoms of elements. Atomic no. & atomic weight

2.3 The periodic classification of elements periodic law

2.4 General characteristics of a period and group

**3.    CHEMICAL BOND          2 Hours**

3.1 Nature of chemical bond

3.2 Electrovalent bond with examples

3.3 Covalent bond (polar and non-polar, sigma & pie bonds with examples)

3.4 Co-ordinate bond with examples

**4.    WATER          2 Hours**

4.1 Chemical nature and properties

4.2 Impurities

4.3 Hardness of water (types, causes and removal)

4.4    Scales of measuring hardness (degrees Clark French, PPM, Mg- per liter)

4.5    Boiler feed water, scales and treatment

4.6    Sea water desalination, sewage treatment

**5.    ACIDS, BASES AND SALTS**      **2 Hours**

5.1    Definitions with examples

5.2    Properties, their strength, basicity and acidity

5.3    Salts and their classification with examples

5.4    Ph – value and scale

**6.    OXIDATION & REDUCTION**      **2 Hours**

6.1    The process, definition and examples

6.2    Oxidizing and reducing agents

6.3    Oxides and their classifications

**7.    NUCLEAR CHEMISTRY**      **2 Hours**

7.1    Introduction

7.2    Radioactivity (alpha, beta and gamma rays)

7.3    Half life process

7.4    Nuclear reaction and transformation of elements

**8.    CEMENT**      **2 Hours**

8.1    Introduction

8.2    Composition and manufacture

8.3    Chemistry of setting and hardening

8.4    Special purpose cements

**9.    GLASS**      **2 Hours**

9.1    Composition and raw material
9.2    Manufacture
9.3    Varieties and uses

**10.    PLASTICS AND POLYMERS**      **2 Hours**

10.1 Introduction and importance

10.2 Classification

10.3 Manufacture

10.4 Properties and uses

**11.    PAINTS, VARNISHES AND DISTEMPER**      **2 Hours**

11.1 Introduction

11.2 Constituents

11.3 Preparation and use

## 12.    CORROSION                                                    **2 Hours**

12.1 Introduction with causes

12.2 Types of corrosion

12.3 Rusting of iron

12.4 Protective measures against corrosion

## 13.    REFRACTORY MATERIALS AND ABRASIVE          **2 Hours**

13.1 Introduction to refractories

13.2 Classification of refractories

13.3 Properties and uses

13.4 Introduction to abrasives

13.5 Artificial and natural abrasives and their uses

## 14.    ALLOYS                                                      **2 Hours**

14.1 Introduction with need

14.2 Preparation and properties

14.3 Some important alloys and their composition

14.4 Uses

## 15.    FUELS AND COMBUSTION                                **2 Hours**

15.1 Introduction of fuels

15.2 Classification of fuels

15.3 Combustion

15.4 Numerical problems of combustion

## 16.    LUBRICANTS                                              **1 Hours**

16.1 Introduction

16.2 Classification

16.3 Properties of lubricants

16.4 Selection of lubricants

## 17.    POLLUTION                                               **1 Hours**

17.1 The problems and its dangers
17.2 Causes of pollution
17.3 Remedies to combat the hazards of pollution

**RECOMMENDED BOOKS**

1.  Text Book of Ch-112, Vol-I, developed by Curriculum Section, Academics wing TEVTA and published

    by National Book Foundation (NBF)

**CH – 112      APPLIED CHEMISTRY**

**INSTRUCTIONAL OBJECTIVES**

**1.      UNDERSTAND THE SCOPE, SIGNIFICANCE AND FUNDAMENTAL ROLE OF THE SUBJECT**

Define chemistry and its important terms

State the units of measurements in the study of chemistry

Write chemical formula of common compounds

Describe types of chemical reactions with examples

**2.      UNDERSTAND THE STRUCTURE OF ATOMS AND ARRANGEMENT OF SUB ATOMIC PARTICLES IN THE ARCHITECTURE OF ATOMS**

Define atom

State the periodic law of elements

Describe the fundamentals sub atomic particles

Distinguish between atomic no. And mass no. Isotopes and isobars

Explain the arrangements of electrons in different shells and sub energy levels

Explain the grouping and placing of elements in the periodic table

**3.      UNDERSTAND THE NATURE OF CHEMICAL BOND**

Define chemical bond

Describe the nature of chemical bond

Differentiate between electrovalent and covalent bonding

Explain the formation of polar and non polar, sigma and pi-bond with examples

Describe the nature of coordinate bond with examples

**4.      UNDERSTAND THE CHEMICAL NATURE OF WATER**

Describe the chemical nature of water with its formula

Describe the general impurities present in water

Explain the causes and methods to removing hardness of water

Express hardness in different units like mg / liter, p.p.m, degrees clark and degrees French

Describe the formation and nature of scales in boiler feed water

Explain the method for the treatment of scales

Explain the sewage treatment and desalination of sea water

5. **UNDERSTAND THE NATURE OF ACIDS, BASES AND SALTS**

        Define acids, bases and salts with examples

        State general properties of acids and bases

        Differentiate between acidity and basicity and use the related terms

        Define salts, state their classification with examples

        Explain p-h value of solution and pH-scale

6. **UNDERSTAND THE PROGRESS OF OXIDATION AND REDUCTION**

        Define oxidation

        Explain the oxidation process with examples

        Define reduction

        Explain reduction process with examples

        Define oxidizing and reducing agents and give at least six examples of each

        Define oxides

        Classify the oxides and give examples

7. **UNDERSTAND THE FUNDAMENTALS OF NUCLEAR CHEMISTRY**

        Define nuclear chemistry and radioactivity

        Differentiate between alpha, beta and gama particles

        Explain half life process

        Explain at least six nuclear reactions resulting in the transformation of some elements

        State important uses of isotopes

8. **UNDERSTAND THE MANUFACTURE, SETTING AND HARDENING OF CEMENT**

        Define Portland cement and give its composition

        Describe the method of manufacture

        Describe the chemistry of setting and hardening of cement

        Distinguish between ordinary and special purpose cement

9. **UNDERSTAND THE PROCESS OF MANUFACTURE OF GLASS**

        Define glass

        Describe its composition and raw materials

        Describe the manufacture of glass

        Explain its varieties and uses

10. **UNDERSTAND THE NATURE AND IMPORTANCE OF PLASTIC AND POLYMERS**

        Define plastics and polymers

        Explain the mechanism of polymerization

Describe the preparation and uses of some plastic / polymers

## 11. KNOW THE CHEMISTRY OF PAINTS, VARNISHES AND DISTEMPERS

Define paints, varnishes and distemper

State composition of each

State methods of preparation of each and their uses

## 12. UNDERSTAND THE PROCESS OF CORROSION WITH ITS CAUSES AND TYPES

Define corrosion

Describe different types of corrosion. State the causes of corrosion

Explain the process of rusting of iron

Describe methods to prevent/ control corrosion

## 13. UNDERSTAND THE NATURE OF REFRACTORY MATERIALS ABRASIVE

Define refractory materials
Classify refractory materials
Describe properties and uses of refractory
Define abrasive
Classify natural and artificial abrasives
Describe uses of abrasives `

## 14. UNDERSTAND THE NATURE AND IMPORTANCE OF ALLOYS

Define alloy
Describe different methods for the preparation of alloys
Describe important properties of alloys
Enlist some important alloys with their composition, properties and uses

## 15. UNDERSTAND THE NATURE OF FUELS AND THEIR COMBUSTION

Define fuels
Classify fuels and make distinction of solid, liquid and gaseous fuels
Describe important fuels
Explain combustion
Calculate air quantities in combustion gases

## 16. UNDERSTAND THE NATURE OF LUBRICANTS

Define a lubricant
Explain the uses of lubricants
Classify lubricants and site examples
State important properties of oils, greases and solid lubricants
State the criteria for the selection of lubricant for particular purpose / job

## 17. UNDERSTAND THE NATURE OF POLLUTION

Define pollution (air, water, food)
Describe the causes of environmental pollution
Enlist some common pollutants
Explain methods to prevent pollution

## Ch-112:   APPLIED CHEMISTRY

**LIST OF PRACTICALS**                                                           **96 Hours**

On completion of this course, the trainees will be able to;

1.      To introduce the common apparatus, glassware and chemical reagents used in the chemistry lab.
2.      To purify a chemical substance by crystallization.
3.      To separate a mixture of sand and salt.
4.      To find the melting point of substance.
5.      To find the pH of a solution with pH paper.
6.      To separate a mixture of inks by chromatography.
7.      To determine the co-efficient of viscosity of benzene with the help of Ostwald's vasomotor.
8.      To find the surface tension of a liquid with a stalagmometer.
9.      To perform electrolysis of water to produce Hydrogen and Oxygen.
10.     To determine the chemical equivalent of copper by electrolysis of $Cu\ SO_4$.
11.     Determination of Heat of Neutralization of NaOH and HCl.
12.     Determination of Heat of Solution of $C_2H_5OH$ and $H_2O$.
13.     Determination of %age of $O_2$ in air.
14.     Determination of %age of $N_2$ in air.
15.     Determination of %age of $CO_2$ in air.
16.     To get introduction with the methods/apparatus of conducting volumetric estimation.
17.     To prepare standard solution of a substance.
18.     To find the strength of a given alkali solution.
19.     To estimate $HCO_3^{-1}$ contents in water.
20.     To estimate $Cl^{-1}$ contents in water.
21.     To estimate $SO_4^{-2}$ contents in water.
22.     To estimate total solids in water.
23.     To find out the %age composition of a mixture solution of $KNO_3$ and KOH volumetrically.
24.     To find out the amount of $Na_2SO_4$ and NaOH in their mixture with titration method.
25.     To find the boiling point of Freon-12, or R-134a and Freon-22.
26.     To find the density of Freon-12, or R 134a and Freon-22 with the help of sp. gravity bottle.
27.     To prepare Ammonia gas in Laboratory and perform its tests.
28.     To get introduction with the scheme of analysis of salts for basic radicals.
29.     To analyse Ist group radials ($Ag^{+1}$, $Pb^{+2}$, $Hg^{+1}$).
30.     To exercise Practice for detection of Ist group radicals.
31.     To detect and confirm II-A group radicals ($Hg^{+2}$, $Pb^{+4}$, $Cu^{+2}$, $Bi^{+3}$, $Cd^{+2}$)
32.     To detect and confirm II-B group radicals ($AS^{+3}$, $Sb^{+3}$, $Sn^{+2,\ +4}$)

**Phy-122      APPLIED PHYSICS**

**Total Contact Hours**

|  |  |  | T | P | C |
|---|---|---|---|---|---|
| Theory | : | 32 | | | |
| Practicals | : | 96 | 1 | 3 | 2 |

**AIMS**:      The students will be able to understand the fundamental principles and concept of physics, use these to solve problems in practical situations/technological courses and understand concepts to learn advance physics/technical courses.

**COURSE CONTENTS**

**1      MEASUREMENTS.**                                                                                **2 Hours**
       1.1      Fundamental units and derived units
       1.2      Systems of measurement and S.I. units
       1.3      Concept of dimensions, dimensional formula
       1.4      Conversion from one system to another
       1.5      Significant figures

**2      SCALARS AND VECTORS.**                                                             **4 Hours**
       2.1      Revision of head to tail rule
       2.2      Laws of parallelogram, triangle and polygon of forces
       2.3      Resolution of a vector
       2.4      Addition of vectors by rectangular components
       2.5      Multiplication of two vectors, dot product and cross product

**3      MOTION**                                                                                               **4 Hours**
       3.1      Review of laws and equations of motion
       3.2      Law of conservation of momentum
       3.3      Angular motion
       3.4      Relation between linear and angular motion
       3.5      Centripetal acceleration and force
       3.6      Equations of angular motion

**4      TORQUE, EQUILIBRIUM AND ROTATIONAL INERTIA.**               **6 Hours**
       4.1      Torque
       4.2      Centre of gravity and centre of mass
       4.3      Equilibrium and its conditions
       4.4      Torque and angular acceleration
       4.5      Rotational inertia

**5      WAVE MOTION.**                                                                                **5 Hours**
       5.1      Review Hooke's law of elasticity
       5.2      Motion under an elastic restoring force
       5.3      Characteristics of simple harmonic motion
       5.4      S.H.M. and circular motion
       5.5      Simple pendulum
       5.6      Wave form of S.H.M.

      5.7     Resonance
      5.8     Transverse vibration of a stretched string

## 6    SOUND.                                 5 Hours

      6.1     Longitudinal waves
      6.2     Intensity, loudness, pitch and quality of sound
      6.3     Units of Intensity of level and frequency response of ear
      6.4     Interference of sound waves silence zones, beats
      6.5     Acoustics
      6.6     Doppler effect.

## 7    LIGHT.                                   5 Hours

      7.1     Review laws of reflection and refraction
      7.2     Image formation by mirrors and lenses
      7.3     Optical instruments
      7.4     Wave theory of light
      7.5     Interference, diffraction, polarization of light waves
      7.6     Applications of polarization in sunglasses, optical activity and stress analysis

## 8    OPTICAL FIBER.                       2 Hours

      8.1     Optical communication and problems
      8.2     Review total internal reflection and critical angle
      8.3     Structure of optical fiber
      8.4     Fiber material and manufacture
      8.5     Optical fiber - uses.

## 9    LASERS.                                  3 Hours

      9.1     Corpuscular theory of light
      9.2     Emission and absorption of light
      9.3     Stimulated absorption and emission of light
      9.4     Laser principle
      9.5     Structure and working of lasers
      9.6     Types of lasers with brief description.
      9.7     Applications (basic concepts)
      9.8     Material processing
      9.9     Laser welding
      9.10    Laser assisted machining
      9.11    Micro machining
      9.12    Drilling, scribing and marking
      9.13    Printing
      9.14    Lasers in medicine

## RECOMMENDED BOOKS

1. Text Book of Phy-122, Vol-I, developed by Curriculum Section, Academics wing TEVTA and published by National Book Foundation (NBF)

**Phy-122    APPLIED PHYSICS**

**INSTRUCTIONAL OBJECTIVES**

1    **USE CONCEPTS OF MEASUREMENT TO PRACTICAL SITUATIONS AND TECHNOLOGICAL PROBLEMS**.
        1.1    Write dimensional formulae for physical quantities
        1.2    Derive units using dimensional equations
        1.3    Convert a measurement from one system to another
        1.4    Use concepts of measurement and Significant figures in problem solving.

2    **USE CONCEPTS OF SCALARS AND VECTORS IN SOLVING PROBLEMS INVOLVING THESE CONCEPTS.**
        2.1    Explain laws of parallelogram, triangle and polygon of forces
        2.2    Describe method of resolution of a vector into components
        2.3    Describe method of addition of vectors by rectangular components
        2.4    Differentiate between dot product and cross product of vectors
        2.5    Use the concepts in solving problems involving addition resolution and multiplication of vectors.

3    **USE THE LAW OF CONSERVATION OF MOMENTUM AND CONCEPTS OF ANGULAR MOTION TO PRACTICAL SITUATIONS.**
        3.1    Use law of conservation of momentum to practical/technological problems.
        3.2    Explain relation between linear and angular motion
        3.3    Use concepts and equations of angular motion to solve relevant technological problems.

4    **USE CONCEPTS OF TORQUE, EQUILIBRIUM AND ROTATIONAL INERTIA TO PRACTICAL SITUATION/PROBLEMS.**
        4.1    Explain Torque
        4.2    Distinguish between Centre of gravity and centre of mass
        4.3    Explain rotational Equilibrium and its conditions
        4.4    Explain Rotational Inertia giving examples
        4.5    Use the above concepts in solving technological problems.

5    **USE CONCEPTS OF WAVE MOTION IN SOLVING RELEVANT PROBLEMS.**
        5.1    Explain Hooke's Law of Elasticity
        5.2    Derive formula for Motion under an elastic restoring force
        5.3    Derive formulae for simple harmonic motion and simple pendulum
        5.4    Explain wave form with reference to S.H.M. and circular motion
        5.5    Explain Resonance
        5.6    Explain Transverse vibration of a stretched string
        5.7    Use the above concepts and formulae of S.H.M. to solve relevant problems.

6    **UNDERSTAND CONCEPTS OF SOUND.**
        6.1    Describe longitudinal wave and its propagation
        6.2    Explain the concepts: Intensity, loudness, pitch and quality of sound
        6.3    Explain units of Intensity of level and frequency response of ear

      6.4     Explain phenomena of silence zones, beats
      6.5     Explain Acoustics of buildings
      6.6     Explain Doppler effect giving mathematical expressions.

## 7 USE THE CONCEPTS OF GEOMETRICAL OPTICS TO MIRRORS and LENSES.
      7.1     Explain laws of reflection and refraction
      7.2     Use mirror formula to solve problems
      7.3     Use the concepts of image formation by mirrors and lenses to describe working of optical instruments, e.g. microscopes, telescopes, camera and sextant.

## 8 UNDERSTAND WAVE THEORY OF LIGHT
      8.1     Explain wave theory of light
      8.2     Explain phenomena of interference, diffraction, polarization of light waves
      8.3     Describe uses of polarization given in the course contents.

## 9 UNDERSTAND THE STRUCTURE, WORKING AND USES OF OPTICAL FIBER.
      9.1     Explain the structure of the Optical Fiber
      9.2     Explain its principle of working
      9.3     Describe use of optical fiber in industry and medicine.

**Phy-122     APPLIED PHYSICS**

**LIST OF PRACTICALS.**

1       Draw graphs representing the functions:

    a)       y=mx for m=0, 0.5, 1, 2

    b)       $y=x^2$

    c)       y=1/x

2       Find the volume of a given solid cylinder using Vernier callipers.

3       Find the area of cross-section of the given wire using micrometer screw gauge.

4       Prove that force is directly proportional to (a) mass, (b) acceleration, using fletchers' trolley.

5       Verify law of parallelogram of forces using Grave-sands apparatus.

6       Verify law of triangle of forces and Lami's theorem

7       Determine the weight of a given body using

    a)       Law of parallelogram of forces

    b)       Law of triangle of forces

    c)       Lami's theorem

8       Verify law of polygon of forces using Grave-sands apparatus.

9       Locate the position and magnitude of resultant of like parallel forces.

10      Determine the resultant of two unlike parallel forces.

11      Find the weight of a given body using principle of moments.

12      Locate the center of gravity of regular and irregular shaped bodies.

13      Find Young's Modules of Elasticity of a metallic wire.

14      Verify Hooke's Law using helical spring.

15      Study of frequency of stretched string with length.

16      Study of variation of frequency of stretched string with tension.

17      Study resonance of air column in resonance tube and find velocity of sound.

18      Find the frequency of the given tuning fork using resonance tube.

19      Find velocity of sound in rod by Kundt's tube.

20      Verify rectilinear propagation of light and study shadow formation.

21      Study effect of rotation of plane mirror on reflection.

22      Compare the refractive indices of given glass slabs.

23      Find focal length of concave mirror by locating centre of curvature.

24      Find focal length of concave mirror by object and image method

25      Find focal length of concave mirror with converging lens.

26      Find refractive index of glass by apparent depth.

27      Find refractive index of glass by spectrometer.

28      Find focal length of converging lens by plane mirror.

29      Find focal length of converging lens by displacement method.

30      Find focal length of diverging lense using converging lens.

31      Find focal length of diverging lens using concave mirror.

32      Find angular magnification of an astronomical telescope.

33      Find angular magnification of a simple microscope (magnifying glass)

34      Find angular magnification of a compound microscope.

35      Study working and structure of camera.

36      Study working and structure of sextant.

37      Compare the different scales of temperature and verify the conversion formula.

38      Determine the specific heat of lead shots.

39      Find the coefficient of linear expansion of a metallic rod.

40      Find the heat of fusion of ice.

41      Find the heat of vaporization.

42      Determine relative humidity using hygrometer.

**BASIC ENGINEERING DRAWING**

CODE:          MT-142                                           **T    P    C**

                                                               **1    3    2**

**TOTAL CONTACT HOURS:**

   **Theory**               **32**

   **Practical**            **96**

**AIMS:**

   At the end of this course the student will be able to understand the fundaments of engineering drawing used in various field of industry specially in the mechanical technology and will become familiar with the use of conventional drawing instruments.

# COURSE CONTENTS

**1**     **Used and Application of Technology Drawing**          **3 Hour**
   1.1     Technology drawing and the technician.
   1.2     Use of technical drawing.
   1.3     Common drawing forms.
   1.4     Application of drawing forms.
   1.5      Practices and conventions.

**2.**    **Drawing Tools and Accessories**                       **3** Hour
   2.1     Drawing Pencil.
   2.2     Drawing papers specifications.
   2.3     Drawing instruments.
   2.4     Use and care of drawing instruments and material.

**3.**    **Alphabet of Lines used in Drawing**                   **3 Hour**
   3.1     Importance of alphabet of lines.
   3.2     Common alphabet of lines.
   3.3     Uses and correct line Weightage of the line.
   3.4     Application of line.

**4.**    **Lettering**                                           **3** Hour
   4.1     Importance of good lettering.
   4.2     Single stroke of gothic.
   4.3     Letter strokes.
   4.4     Letter guide lines.
   4.5     Vertical single stroke gothic.
   4.6     Inclined single stroke gothics.
   4.7     Composition of lettering.

**5.**    **Drawing Lines Technology**                            **4** Hour
   5.1      Introduction to sketching techniques.
   5.2      Sketching lines.
   5.3     Sketching circles and arcs
   5.4     Sketching ellipse.

|  |  |  |
|---|---|---|
|  | 5.5     Sketching views of object |  |
| **6.** | **Geometrical Construction** | **2 Hours** |
|  | 6.1     Introduction to geometry. |  |
|  | 6.2     Definitions of terms. |  |
|  | 6.3     Different conventional shapes, surfaces and objects. |  |
|  | 6.4     Basic geometrical construction. |  |
|  | 6.5     Construction: ellipse, parabola. |  |
|  | 6.6     Involutes and cycloids. |  |
| **7.** | **Introduction to Multi-View Projections** | **4 Hours** |
|  | 7.1     Definition and concept of multi-view drawings. |  |
|  | 7.2     Perceptual view of planes of projections. |  |
|  | 7.3     Orthographic projection. |  |
|  | 7.4     $1^{st}$ angle and $3^{rd}$ angle projection. |  |
|  | 7.5     Principal views. |  |
|  | 7.6     Arrangement of views. |  |
|  | 7.7     Multi-view drawing. |  |
| **8.** | **Introduction to Pictorial Drawings** | **3 Hours** |
|  | 8.1     Uses of pictorial |  |
|  | 8.2     Three types of pictorial views. |  |
|  | 8.3     Isometric sketching of rectangular block. |  |
|  | 8.4     One point perspective sketching of a rectangular block. |  |
|  | 8.5     Two point perspective sketching of a rectangular block |  |
|  | 8.6     Preparation of pictorial drawings of simple objects. |  |
| **9.** | **Basic Dimensioning** | **3 Hours** |
|  | 9.1     Definition of dimensioning. |  |
|  | 9.2     Types of dimensioning. |  |
|  | 9.3     Elements of dimensioning. |  |
|  | 9.4     System of measurements. |  |
|  | 9.5     Dimensioning multi-view drawings. |  |
|  | 9.6     Dimensioning pictorial views. |  |
|  | 9.7     Dimensioning rules and practices |  |
|  | 9.8     Notes and Specifications. |  |
| **10** | **Sectioning and Sectional Views** | **2 Hours** |
|  | 10.1    Definition and purpose. |  |
|  | 10.2    Cutting planes position and cutting plane lines. |  |
|  | 10.3    Types of section views. |  |
|  | 10.4    Conventional section lines of different materials. |  |
|  | 10.5    Practices sectioned views. |  |
| **11.** | **Multi-views Drawing of Machine Elements** | **2 Hours** |
|  | 11.1    Terminology and drawing of rivets and riveted joints |  |
|  | 11.2    Terminology and drawing of screw threads |  |
|  | 11.3    Terminology and drawing of keys and cotters |  |
|  | 11.4    Description and drawing of simple bearings |  |
|  | 11.5    Description and drawing of simple couplings |  |

# PRACTICALS
## 96 HOURS

1. Lettering 5mm height.
2. Lettering 3mm height.
3. Use of Tee square and set squares for drawing horizontal, vertical, and inclined lines.
4. Use of Tee square and set squares for drawing centers, crossing of lines.
5. Use of compass, circles, half circles, radius.
6. Draw round corners, figure inside and outside circle.
7. Plan geometry angles and triangles.
8. Plan geometry quadrilateral, square, rhombus, rectangle, and parallelogram.
9. Plan geometry parallel lines, perpendicular, bisect line and angle.
10. Plan geometry equal division of line and some ratio with the help of compass and set square.
11. Plan geometry inscribes and circumscribes square, triangle and hexagon.
12. Plan geometry construction of polygon, five, six, seven, and eight sides.
13. Plan geometry inscribes pentagon in a circle and pentagon by general and different methods.
14. Plan geometry of tangent of circle inside and outside.
15. Plan geometry construction of ellipse with two methods.
16. Plan geometry construction of ellipse with next two methods.
17. Plan geometry construction of parabola curve 4 methods.
18. Plan geometry construction of hyperbola curve.
19. Plan geometry of spiral curve.
20. Plan geometry of helix curve.
21. Plan geometry construction of in volute curve of square, rectangle, hexagon, and circle.
22. Different types of drawing lines.
23. Orthographic projection $1^{st}$ and $3^{rd}$ angle L block.
24. Orthographic projection $1^{st}$ and $3^{rd}$ angle Step block.
25. Orthographic projection $1^{st}$ and $3^{rd}$ angle Vee block.
26. Orthographic projection $1^{st}$ and $3^{rd}$ given block.
27. Orthographic projection and isometric drawing of given block.
28. Different types of sectioning.
29. Different section lines for different materials.
30. Orthographic projection of V-block sectional views.
31. Orthographic projection Gland sectional views.
32. Orthographic projection open bearing sectional views.

# BOOKS RECOMMENDED

1. French Wirk, "Engineering Drawing"
2. Alan R. Miller, "ABC"s of Auto CAD Release-12".

# INSTRUCTIONAL OBJECTIVES

1. **Uses and Applications of Technical Drawing**
   1.1.1  Know the uses of technical drawing.
   1.1.2  Describe the importance of technical drawing from the view of a technician.
   1.1.3  Explain the main uses of technical drawing from the point of view of a technician.
   1.1.4  Recognize the different applications of technical drawing.
   1.1.5  Identify commonly used drawing forms.
   1.1.6  Illustrate the different drawing forms.
   1.1.7  Differentiate different drawing forms.
   1.1.8  Develop technical vocabulary.

2. **Know the Common Drawing Tools and Accessories**
   2.1  Identify the uses of different pencils for technical drawing.
   2.2  Identify different paper sizes for drawing.
   2.3  Identify different type of papers suitable for drawing.
   2.4  Identify different type of erasers and their uses.
   2.5  Maintain a well sharpened pencil for drawing.
   2.6  Describe the drawing instrument.
   2.7  State the use of drawing instruments.

3. **Understand the Importance of Alphabet, Correct Weight age, and Application of Lines Used in Technical drawing**
   3.1  Know the importance of lines.
   3.2  Know the alphabet of lines.
   3.3  Identify the characteristics of each alphabet of lines.
   3.4  Draw horizontal, vertical, and inclined lines.
   3.5  Draw alone lines with correct Weightage.

4. **Apply the Good Lettering in a Drawing**
   4.1  Know the importance of lettering in a technical drawing.
   4.2  Identify the letter style used in technical drawing.
   4.3  State letter strokes and guidelines
   4.4  Perform better stroke in single stroke gothic.
   4.5  Print vertical single stroke letters and numbers.
   4.6  Print inclined single stroke letters and numbers.
   4.7  Observe stability and pleasing appearance of letters in printing.

5. **Understand Selecting of Circles, Arcs, and Views of Objects**
   5.1  Draw a circular arc using circular line method.
   5.2  Draw a circular arc using square method.
   5.3  Draw an ellipse using rectangular method.
   5.4  Draw view of simple objects.

**6.    Apply Drawing Skill with the Aid of Drawing Instruments in Geometrical Construction**
    6.1     Define common terms used in geometrical construction.
    6.2     Explain different geometrical shapes, surfaces of objects.
    6.3     Draw basic geometrical construction.
    6.4     Draw involute, cycloid, spiral, tangent to circle and arc.

**7.    Understand the Multi-view Projections Specific Objective**
    7.1     Define the concept of multi-view drawings
    7.2     Know principle planes of projection
    7.3     Know the orthographic method of projection
    7.4     Explain the $1^{st}$ and $3^{rd}$ angle projections
    7.5     State six principle views
    7.6     Practice multi-views

**8.    Apply the Use, Types, and Methods of Pictorial Views**
    8.1     Know the use of pictorial views.
    8.2     Know the pre-requisite of pictorial drawing.
    8.3     State three types of pictorial drawings.
    8.4     Draw isometric view of rectangular blocks, arcs, circles.
    8.5     Draw oblique sketching of rectangular blocks.
    8.6     Draw one-point perspective view of a rectangular block.
    8.7     Draw two-point perspective view of a rectangular block.
    8.8     Prepare/draw pictorial drawings of simple objects.

**9.    Apply Good Dimensioning on Multi-views and Pictorials**
    9.1     Define dimensioning.
    9.2     Identify the types of dimensioning.
    9.3     Enlist the elements of dimensioning.
    9.4     Identify the system of measurement.
    9.5     Indicate complete dimensions on multi-view drawings.
    9.6     Indicate complete dimensions on pictorial drawings.
    9.7     Following the general rules for dimensioning.
    9.8     Indicate notes and specifications on multi-view drawings.

**10.    Apply the Sectioning Methods of Materials and Draw Sectional Views**
    10.1    Define sectioning and its purpose.
    10.2    Describe cutting planes and lines.
    10.3    State types of sectional views.
    10.4    Explain conventional section lines of different materials.
    10.5    Practice sectioning.

**11.    Apply Drawing Methods to Draw Multi-views of Machine Elements**
    11-1 Draw multi-views of Vee-blocks
    11-2 Draw multi-views of Gland 11-3
    Draw Keys and cotters
    11-4  Draw multi-views of simple bearing

**TD-114      TEXTILE  FUNDAMENTAL**

| Total Contact Hours: | | **T** | **P** | **C** |
|---|---|---|---|---|
| **Theory** | **:128** | **4** | **0** | **4** |
| **Practical** | **: 00** | | | |

**AIMS OF THE SUBJECT:**

1.      To familiarize the student with textile raw material.
2.      To develop with in the students necessary knowledge of Textile Technology.

**TOPICS/SUB TOPICS:**

**1.      TEXTILE FIBRES                                                8 hours**
      1.1     Classification of Textile Fibres.
      1.2     Natural Fibres.
      1.3     Man made Fibres.

**2.      COTTON                                                       8 Hours**
      2.1     Natural history of Cotton.
      2.2     Structure of Cotton Fibre.
      2.3     Types of Commercial Cotton.

**3.      GINNING                                                      2 Hours**
      3.1     Introduction to Ginning.
      3.2     Types of Ginning.

**4.      JUTE                                                         4 Hours**
      4.1     Growing of Jute.
      4.2     Harvesting of Jute.
      4.3     Production of Jute.

**5.      WOOL                                                         4 Hours**
      *5.1*     Introduction to Wool.
      *5.2*     Wood sorting.
      5.3     Composition of Raw Wool.

**6.      SILK                                                         4 Hours**
      6.1     Cultivation of Silk Worm.
      6.2     Properties of Silk.
      6.3     Composition of Silk.

**7.      THE BASIC PRINCIPLES INVOLVED IN YARN           24 Hours**
      **MANUFACTURING**
      7.1     Opening.
      7.2     Cleaning.
      7.3     Drafting.
      7.4     Twisting.

**8.    PROCESS INVOLVED IN FABRIC FORMATION          24 Hours**
   8.1    Cone Winding.
   8.2    Warping.
   8.3    Sizing.
   8.4    Drawing-in.
   *8.5*    Looming.

**9.    PROCESS INVOLVED IN FABRIC PROCESSING          24 Hours**
   9.1    Pre-Treatment.
   9.2    Dyeing.
   9.3    Printing.
   9.4    Finishing.

**10.    FLOW CHARTS                                    6 Hours**
   10.1    Flow Chart of Spinning.
   10.2    Flow Chart of Weaving.
   10.3    Flow Chart of Processing.

**11.    KNITTING                                       6 Hours**
   11.1    Introduction to Knitting.
   11.2    Weft and Warp Knitting.

**12.    YARN NUMBER                                    6 Hours**
   12.1    Yarn Numbering System.

**13.    TEXTILE DESIGN                                 8 Hours**
   13.1    Definition of Design.
   13.2    Basic Weaves.

# TD-114 TEXTILE FUNDAMENTAL

**INSTRUCTIONAL OBJECTIVES:**

**1.    UNDERSTAND TEXTILE FIBRES**
1.1    Enlist types of Textile Fibres.
1.2    Explain Natural Fibres.
1.3    Explain Man made Fibres.

**2.    UNDERSTAND COTTON**
2.1    Explain natural history of Cotton.
2.2    Explain structure of Cotton Fibre.
2.3    Enlist types of Commercial Cottons.

**3.    UNDERSTAND THE PROCESS OF GINNING**
3.1    State the Ginning Process.
3.2    Explain types of Ginning.

**4.    UNDERSTAND JUTE FIBRE**
4.1    Explain Jute Fibre.
4.2    State the method of Jute Cultivation.
4.3    Explain the harvesting of Jute Fibres.

**5.    UNDERSTAND WOOL**
5.1    Explain Wool Fibre.
5.2    Explain Wool sorting.
5.3    Explain composition of Raw Wool.

**6.    UNDERSTAND SILK**
6.1    Explain cultivation of Silk worm.
6.2    Explain physical proposition of Silk Fibre.
6.3    Explain Silk Filament Processing.
6.4    Explain composition of Silk.

**7.    UNDERSTAND YARN MANUFACTURING**
7.1    Explain method of opening and cleaning in blow room.
7.2    Explain Card Machine.
7.3    Explain Draw Frame.
7.4    Explain Roving Frame.
7.5    Explain Ring Frame.

**8.    UNDERSTAND WOVEN FABRIC FORMATION**
8.1    Explain Cone Winding.
8.2    Explain Warping.
8.3    Explain Sizing.
8.4    Explain Pirn Winding.
8.5    Explain Drawing-in.
8.6    Explain Looming.

**9.      UNDERSTAND WET PROCESSING**
   9.1      Explain Inspection of gray Fabric.
   9.2      Explain De-sizing.
   9.3      Explain singing.
   9.4      Explain scouring.
   9.5      Explain Bleaching.
   9.6      Explain Printing.
   9.7      Explain Finishing.

**10.     UNDERSTAND LAYOUT AREAS OF SPINNING, WEAVING AND DYEING PRINTING**
   10.1     Draw Flow Chart of Spinning.
   10.2     Draw Flow Chart of Weaving.
   10.3     Draw Flow Chart of Dyeing and Printing.

**11.     UNDERSTAND KNITTING**
   11.1     Explain Knitting Process.
   11.2     Discuss warp and weft knitting.

**12.     UNDERSTAND YEARM NUMBERING SYSTEM**
   12.1     Explain yarn numbering system.

**13.     UNDERSTAND TEXTILE DESIGN**
   13.1     Explain Woven Fabric Design.
   13.2     Discuss Design Paper.
   13.3     Explain Basic Weaves.

**TT-123 (Rev.) WORKSHOP PRACTICE**       **(METAL, WELDING, WOOD)**

**TOTAL CONTACT HOURS: 192 Hrs.**                                    **T      P      C**

    **Theory:**          **0**                                                        **0      6      2**

    **Practicals      192 Hrs.**

**LIST OF PRACTICALS:**

**(A)   METAL SHOP**                                                          **32 Hours**
1.      Preparation of name plate.
2.      Sawing exercise.
3.      Preparation of inside caliper.
4.      Preparation of Bottle opener.
5.      Preparation of dove-tail joint.
6.      Preparation of small size Try-square.
7.      Preparation of Coat hook.
8.      Preparation of funnel (sheet)
9.      Preparation of Pin tray (sheet).
10.     Preparation of Drawer handle.
11.     Preparation of bevel square.
12.     Preparation of Spanner (small size).

**(B)   WELDING SHOP**                                                        **96 Hours**

1.      Describe Welding and its process
    1.1.   Gas Welding
    1.2.   Arc Welding
    1.3.   Spot Welding
    1.4.   Tig and Mig Welding
2.      Flame making practice.
3.      Pool making.
4.      Bed making.
5.      Welding Joint
    5.1.   Butt joint.
    5.2.   Lap joint.
    5.3.   T. joint.
    5.4.   Edge joint.
6.      Corner Joint without filler Rod
7.      Corner Joint with filler Rod
8.      Brazing practice.
9.      Arc Welding:
    9.1.   Arc making/current setting/polarity selection.
    9.2.   Bed making.
    9.3.   Butt joint.
    9.4.   V. Butt joint.
    9.5.   Lap joint.
    9.6.   Corner joint.

9.7.    T. joint.
9.8.    Square corner joint.
9.9.    Bevel butt joint.
        .
10.     Forging:
    10.1    Forging and its processes
    10.2    Describe forging and its operations
    10.3    Materials costing
        10.3.1    Aluminum, Ferrous, Brass and steel alloys
        10.3.2    Pattern making
    10.4    Cutting with chisel hot and cold.
    10.5    Upsetting.
    10.6    Twisting.
    10.7    Heading.
    10.8    Drawing by forging.


**(C)  WOOD WORKING SHOP**                                      **64 hours**

1.      Safety precautions in wood working shop.
2.      Using of various wood working tools
3.      Planning and squaring to dimensions. (Job-1)
4.      Introducing different wood working, layout and measuring tools.
5.      Sawing exercise (job-2).
6.      Identifying different types of handsaws and making sketches of all saws.
7.      Wood chiseling.
8.      Making middle half cross-lap joint. (job-3).
9.      Making Mortise and Tenon joint. (job-4).
10.     Making dado-joint (job-5).
11.     Observing wood structure.
12.     Identifying and comparing soft and hard wood.
13.     Boring process, making holes of different diameters in wood. (job-6)
14.     Nailing and wood screwing process. (job-7+8)
15.     Making dove-tail joint. (job-9)
16.     Wood working projects.
17.     Spirit polishing (preparing wood surface for polishing, staining and lacquering).

**COMP-152**                    **COMPUTER APPLICATIONS**

**Total Contact Hours**                                          **T     P     C**
    **Theory:**      **32 Hrs**                                **1     3     2**
    **Practical:**    **96 Hrs**

**Pre-requisites:** 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.

**Course Contents:**

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

2. **MS-WINDOWS 10**                                              **2 Hrs**
   2.1   Introduction to Windows
   2.2   How to install Drivers in Windows
   2.3   Loading & Shut down process
   2.4   Introduction to Desktop items (Creation of Icons, Shortcut, Folder & modify Taskbar)
   2.5   Desktop properties
   2.6   Use of Control Panel
   2.7   Searching a document

3. **MS-OFFICE (MS-WORD -2016)**                                  **8 Hrs**
   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 -2016)**               **9 Hrs**
    4.1  Introduction to MS-Excel & its Screen
    4.2  Entering data & apply formulas in worksheet
    4.3  Editing & Formatting the Cells, Row & Colum
    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- 2016)**       **4 Hrs.**
    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**               **3Hrs**
    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  Drop Box / Online/ Sky drive/ Cloud data etc.
    6.5  File attachment.
    6.6  Uploading and downloading file(s) and software(s)
    6.7  Explain some advance features over the internet and search engines
    6.8  Difference between Internet, Intranet and Extranet

**Recommended Textbooks:**

    **1.**    Bible Microsoft Office 2016 by John Walkenbach

    **2.**    Bible Microsoft Excel 2016 by John Walkenbach

    **3.**    Bible Microsoft PowerPoint 2016 by John Walkenbach

**COMP-152    COMPUTER APPLICATIONS**
**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.  Generations of Computers
   1.4.  Explain Block diagram of a computer system
   1.5.  State the terms such as BIT, Byte, RAM & ROM
   1.6.  Identify Input & Output devices
   1.7.  Describe Secondary Storage devices
   1.8.  Explain Types of Software
   1.9.  Introduction to Programming Language
   1.10. Explain Applications of computer in different fields
   1.11. Application in Engineering, Education & Business

2. **UNDERSTAND MS-WINDOWS 10**
   2.1  Explain Introduction to Windows
   2.2  How to install Drivers in Windows
   2.3  Describe Loading & Shut down process
   2.4  Explain Introduction to Desktop items (Creation of Icons, Shortcut, Folder & modify Taskbar)
   2.5  Explain Desktop properties
   2.6  Describe use of Control Panel (add/remove program, time & date, mouse and create user account)
   2.7  Explain the method of searching a document

3. **UNDERSTAND MS-OFFICE (MS-WORD – 2016)**
   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- 2016)**
   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-2016)
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
6.4    Interpret Drop Box / Online/ Sky drive/ Cloud data etc.
6.5    File attachment.
6.6    Uploading and downloading file(s) and software(s)
6.7    Explain some advance features over the internet and how to search topics on different search engines
6.8    Enlist the Difference between Internet, Intranet and Extranet

**COMP-152**     **COMPUTER APPLICATIONS**

**List of Practical:**

1.  **Identify key board, mouse, CPU, disk drives, disks, monitor, and printer** and        **3 Hrs**

2.  **MS WINDOWS 10**        **12 Hrs**
    2.1   Practice of loading and shutdown of operating system
    2.2   How to install Drivers in Windows
    2.3   Creating items (icons, shortcut, folders etc) and modifying taskbar
    2.4   Changing of wallpaper, screensaver, and resolution
    2.5   Practice of control panel items (add/remove, time and date, mouse, and create user account)

3.  **MS OFFICE (MS-WORD 2016)**        **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 2016)**        **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 2016)**        **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 mails, download attachments
    6.4   File attachment.
    6.5   Uploading and downloading file(s) and software(s)

**Elect-112**  **GENERAL ELECTRICITY AND ELECTRONICS**

| Total Contact Hours | | T | P | C |
|---|---|---|---|---|
| Theory: | 32 Hrs | 1 | 3 | 2 |
| Practical: | 96 Hrs | | | |

**Pre-requisites:** Applied Physics (1st year)

**AIMS:** This course enables the students to understand the fundamental of electricity, know the devices used for control of industrial equipment, their properties and uses. The course provides the knowledge of working principles and operation of A.C. and D.C. motors, transformers and generators, interpret connection diagrams of various electrical devices. Students will be able to observe safety rules and provide electric shock treatment.

**Corse Contents:**

| 1. | FUNDAMENTALS OF ELECTRICITY | 4Hrs |
|---|---|---|
| 2. | PROTECTION DEVICES AND ELECTRICAL SAFETY | 5Hrs |
| 3. | MOTORS, GENERATORS AND TRANSFORMERS | 6Hrs |
| 4. | INSTRUMENTS AND WIRING | 6Hrs |
| 5. | FUNDAMENTALS OF ELECTRONICS | 6Hrs |
| 6. | TRANSISTORS/AND SPECIAL DIODES | 5Hrs |

**Detail of Contents:**

**1. FUNDAMENTALS OF ELECTRICITY**  **4 Hrs**
  1.1  Current, (AC and DC Supply) voltage and resistance, their units, single phase  and three phase supply
  1.2  Ohms law, simple calculations
  1.3  Laws of resistance, simple calculations
  1.4  Combination of resistances, simple calculations, capacitors and their combinations
  1.5  Electrical and mechanical power, their conversion, units, horse power
  1.6  Heating effect of current, joules law
  1.7  Electrical energy, units, energy bill
  1.8  Batteries and battery cells

**2. PROTECTION DEVICES AND ELECTRICAL SAFETY**  **5 Hrs**
  2.1  Fuse and their types
  2.2  Circuit breaker and their types
  2.3  Relay and their types
  2.4  Starter and their types

**3. MOTORS, GENERATORS AND TRANSFORMERS**  **6 Hrs**
  3.1  Faraday's law
  3.2  Construction and working of AC and DC generators

3.3    Construction and working of transformers, emf and current equation types

3.4    Welding transformers, ratings

3.5    Types and working of motors

     3.5.1    AC MOTORS

          3.5.1.1    1- Phase induction motor

          3.5.1.2    3- Phase induction motors

     3.5.2    DC MOTORS

          3.5.2.1    Stepper motors

          3.5.2.2    Servo motors

## 4.   (A) MEASURING INSTRUMENTS           6Hrs

4.1    Basic Electrical measuring instruments

4.2    Ammeter, Voltmeter, Ohm meter, Multimeter, Watt meter Energy Meter and their connections

4.3    Use of multimeter

4.4    Use of megger

### (B) DOMESTIC WIRING

4.5    Introduction to wiring and their types

## 5.   FUNDAMENTALS OF ELECTRONICS           6 Hrs

5.1    Semi-conductor theory, doping, P & N type materials

5.2    PN Junction diode, potential barrier, forward and reverse bias

5.3    Use of PN Diode as rectifier

5.4    Half-wave, full-wave and bridge rectifiers

5.5    Filtering, inverters and stabilizers

5.6    Power supply

## 6.   TRANSISTORS/AND SPECIAL DIODES           5 Hrs

6.1    PNP & NPN transistors, biasing, working

6.2    Use of transistors as amplifies, gains in CE, CB and CC amplifiers

6.3    Zener diode

6.4    Photo diode, photovoltaic cells, LED

## Recommended Textbooks:

1.    Examples of Electrical Calculations, by Admiralty
2.    Reed's Basic electro-technology for marine engineers, KRAAL
3.    Electrical Technology, B.L. Theraja
4.    AC & DC circuits   B. Grob
5.    Basic Electronics B. Grob
6.    Digital Electronics by Moris Mayno

**Elect-112**   GENERAL ELECTRICITY AND ELECTRONICS

**Instructional Objectives:**

1. **UNDERSTAND BASIC CONCEPTS AND LAWS OF ELECTRICITY**
   1.1   Define units of current, voltage and resistance with respect to supply of single phase and three phase
   1.2   Explain Ohm's Law with simple calculations
   1.3   Solves simple problems on laws of resistance
   1.4   Substitute two of the three variables to find the third unknown in equation $V = I \times R$
      1.4.1   Calculate the equivalent resistances for resistors joined in series, parallel and combination
      1.4.2   Calculate the total capacitance in series and parallel
   1.5   Calculate electrical and mechanical power and the inter relation between the two systems
   1.6   Heating effect of current, Jowls Law
   1.7   Calculate the electrical energy consumption in an installation and prepare the energy bill
   1.8   Define the inductors and its uses
   1.9   Define RLC circuit and its uses
   1.10  Define the batteries and battery cell
      1.10.1   Define primary and secondary battery
      1.10.2   State the types of primary and secondary batteries

2. **UNDERSTAND PROTECTION DEVICES AND ELECTRICAL SAFETY**
   2.1   Define Fuse and its current rating, fusing factor, Types of fuses, Rewirable and HRC
   2.2   Explain working of circuit breaker, Types of C.B, High power circuit breaker and their types, Domestic Circuit breakers
      2.2.1   Difference between MCB and MCCB, Types of MCB w.r.t. poles
   2.3   Define relay and explain its working
      2.3.1   State types of relays w.r.t working
   2.4   Describe starter and its types
      2.4.1   Explain the working of following starter, 3Point, 4Point and star delta starter and soft starter)
      2.4.2   Understand personal safety while working on electricity)

3. **UNDERSTAND WORKING OF ELECTRIC MOTORS, AND GENERATORS AND TRANSFORMERS**
   3.1   Explain Faraday's law
   3.2   State the construction of alternator and D.C. generator with its parts and working
   3.3   Explain the working principal of transformers and emf equation
   3.4   State various parts of a welding transformer and setting
   3.5   Explain the working of single phase, three phase, and servo motors
   3.6   Explain the working of stepper motors

4. **INSTRUMENTS AND BASIC WIRING**
   4.1   Define instrument and their types, Use of instruments and their connections)
   4.2   Define secondary analog digital and working effect
   4.3   Explain types of meters, there uses and connection in a circuit, Ammeter, Voltmeter, Ohm meter, Multimeter, Watt meter and Energy Meter

4.4    Define electric wiring and enlist the accessories used in Domestic wiring

        4.4.1    Describe batten wiring, conduit PVC, casing capping wiring, advantages and disadvantages of each

## 5.    UNDERSTAND THE FUNDAMENTALS OF ELECTRONICS

5.1    State the Semiconductor theory

        5.1.1.    State how P type and N type material is produced

5.2    State the action of potential barrier in a PN junction and the effect of forward and reverse bias on the junction

5.3    Describe the use of PN junction diode as rectifier

5.4    Draw and explain the circuit diagram for half wave and full wave rectifier

5.5    Draw and explain the Bridge Rectifier circuit with filter circuit, investors and stabilizer and its circuits

5.6    Explain Power supply

## 6.    UNDERSTAND THE WORKING OF SPECIAL DIODES

6.1    State the biasing working of Zener diodes

6.2    State the construction working and uses of photo diodes, Photovoltaic cell and LED

**Elect-112      GENERAL ELECTRICITY AND ELECTRONICS**

**List of Practical:**

1. **FUNDAMENTALS OF ELECTRICITY**
   1.1   Study of electrical measuring instruments, handling precautions, methods of connection and identification of AC & DC Meter
   1.2   Verification of Ohm's law
   1.3   Verification laws of combination; of resistance
   1.4   Measurement of power by Volt-ammeter and wattmeter
   1.5   Measurement of electrical energy
   1.6   Use of primary and secondary batteries

2. **PROTECTION DEVICES AND ELECTRICAL SAFETY**
   2.1   Application of various fuses in wiring
   2.2   Study of connection circuit breaker 2 pole, 3 pole with time setting

3. **MOTORS, GENERATORS AND TRANSFORMERS**
   3.1   Verification of faraday's laws of electro-magnetic induction
   3.2   Connection of star delta starter and timer
   3.3   Study of AC and DC generators
   3.4   Study of welding transformers
   3.5   Starting single-phase induction motors, reversal and forward
   3.6   Starting 3-phase induction motors, reversal and forward
   3.7   Connections of magnetic starters with motors

4. **INSTRUMENTS AND WIRING**
   4.1   Current carrying capacity of cables
   4.2   Wiring, PVC, casing Capping and Batten
   4.3   Use of oscilloscope
   4.4   Study of calibration of instruments using bridge circuits
   4.5   Study of using AVO meter and meggar analog and digital

5. **FUNDAMENTALS OF ELECTRONICS**
   5.1   Study and connections of PN diodes as rectifiers
   5.2   Connecting PN Diode as half-wave and full-wave rectifier
   5.3   Connecting PN Diode as bridge Rectifiers with filter
   5.4   Study of Power Supply

6. **TRANSISTORS AND SPECIAL DIODES**
   6.1   Connections and biasing of PNP and NPN transistors
   6.2   Study and connections of Zener diode as voltage regulator
   6.3   Study and connections of Photodiode as light sensing device
   6.4   Study and connections of DIAC's and TRIAC's as switch circuits

# 2nd Year

اسلامیات

## تدریس مقاصد

عمومی مقاصد بطالبعلم یہ بیان سکے کہ آیات قرآنی کی روشنی میں مومن کے اوصاف کیا ہیں،

قرآن مجید                                منتخب آیات قرآنی

خصوصی مقاصد :

☆    قرآنی آیات کا ترجمہ بیان کرسکے

☆    قرآنی آیات کی تشریح کرسکے

☆    قرآنی آیات کی روشنی میں ایک مومن کے اوصاف بیان کرسکے

☆    قرآنی آیات میں بیان کردہ مومن کے اوصاف اپنے اندر پیدا کرسکے

احادیث نبویہ

☆    عمومی مقصد احادیث کی روشنی میں اسلامی اخلاقی اقدار (انفرادی و اجتماعی) سے آگاہ ہو سکے

خصوصی مقاصد :

☆    احادیث کا ترجمہ بیان کرسکے

☆    احادیث کی تشریح کرسکے

☆    احادیث کی روشنی میں اسلام کی اخلاقی اقدار کی وضاحت کرسکے

☆    ان احادیث کی دی گئی تعلیمات کے مطابق اپنی زندگی گزار سکے

سیرت طیبہ

☆    عمومی مقصد : حضور ﷺ کی سیرت طیبہ کے بارے میں جان سکے

خصوصی مقاصد :

☆    حضور ﷺ کی ابتدائی زندگی انتصار کے ساتھ بیان کرسکے

☆    حضور ﷺ کی ہجرت کا واقع بیان کرسکے

☆    حضور ﷺ کی مدنی زندگی انتصار سے بیان کرسکے

☆    حضور ﷺ کی بطور معلم خصوصیات بیان کرسکے

☆ حضور صلی اللہ علیہ وسلم کی بطور سربراہ خاندان بیان کر سکے

اسلامی معاشرہ

عمومی مقصد : اسلامی معاشرہ کی خصوصیات سے آگاہی حاصل کر سکے

خصوصی مقاصد :

☆ اسلامی معاشرہ کا معنی و مفہوم بیان کر سکے

☆ اسلامی معاشرہ کی امتیازی خصوصیات بیان کر سکے

☆ اسلامی معاشرہ میں عدل و احسان کی اہمیت بیان کر سکے

☆ تبلیغ کے لغوی معنی بیان کر سکے

☆ تبلیغ کی اہمیت و ضرورت بیان کر سکے

☆ جہاد کے لفظی و اصطلاحی معنی بیان کر سکے

☆ جہاد کی اہمیت بیان کر سکے

☆ جہاد اور قتل میں فرق بیان کر سکے

☆ جہاد کی مختلف اقسام بیان کر سکے

☆ لفظ مسجد کی تعریف کر سکے

مسجد کی سابقہ حیثیت کو بحال کرنے کے بارے میں اقدامات کو بیان کر سکے

# اسلامی ریاست

عمومی مقاصد : اسلامی ریاست کی خصوصیت بیان کر سکے

خصوصی مقاصد :

☆ ریاست کی تعریف بیان کر سکے

☆ اسلامی ریاست میں طرز حکومت سے آگاہی حاصل کر سکے

☆ اسلامی ریاست کی خصوصیات بیان کر سکے

☆ اسلامی ریاست کے اغراض و مقاصد بیان کر سکے

☆ اسلامی ریاست کے قیام کیلئے جدوجہد کر سکے

نصاب مطالعہ پاکستان

سال دوم

حصہ دوم

| نی | لی | کی |
|---|---|---|
| ا | 0 | 0 |

کل وقت: ۲۵ گھنٹے

## موضوعات

☆ دو قومی نظریہ

☆ تحریک پاکستان

☆ انڈین کانگریس

☆ مسلم لیگ

☆ تقسیم بنگال

☆ میثاق لکھنؤ

☆ تحریک خلافت

☆ سندھ کی تحریک

☆ تجویز دہلی

☆ سائمن رپورٹ

☆ قائداعظم کے چودہ نکات

☆ خطبہ آلہ آباد

☆ انتخابات 1936 اور انتقال اقتدار

☆ قرارداد پاکستان

حصہ دوم

معاشرہ پاکستان

# تدریس مقاصد

تحریک پاکستان

عمومی مقصد: قیام پاکستان کے اسباب و محرکات کو بیان کر سکے

خصوصی مقاصد:

☆ قومیت کے مفہوم کو بیان کر سکے

☆ دو قومی نظریہ کی تعریف و توضیح کر سکے

☆ دو قومی نظریہ اہمیت بیان کر سکے

☆ ہندوستان میں مسلمانوں کی محرومیوں کو بیان کر سکے

☆ قومی تشخص کو بحال رکھنے کے لئے مسلمانان ہند کی مساعی بیان کر سکے

☆ آزادی ہند اور قیام پاکستان علامہ اقبال اور قائد اعظم کی مساعی بیان کر سکے

☆ قیام پاکستان سے مستقبل اسلامی مملکت کے قیام کے لئے مسلم عوام کی کوششوں کو بیان کر سکے

☆ مسلم لیگ کے قیام پاکستان کے لئے جدوجہد بیان کر سکے

(غیر مسلم طلباء کے لئے)

نصاب اخلاقیت

سال: دوم

کل وقت: 20 گھنٹے

## موضوعات

معاشرتی اقدار (حفاظ، ہمسایہ۔ قوم۔ قومی سطح۔ شہری سطح۔ صنعتی اداروں کی سطح۔ ضلع و ریاست۔ ورثہ)

☆ حقوق و فرائض

☆ قوت برداشت

☆ قوت ارادی

☆ لگن و جذبہ

☆ وسیع النظری

☆ بے غرضی

☆ تمثیل و رحمی

☆ حفاظتی شعور

☆ پاس آزادی

☆ کامل آگہی

☆ تغیرات کو قبول کرنا

☆ خود شناسی

نصاب اخلاقیات

سال دوم

## تدریس مقاصد

عمومی مقاصد :

طالب علم: اخلاقیات کی اہمیت و ضرورت سے سمجھ ہو سکے اور بیان کر سکے

خصوصی مقاصد :           طالب علم اس قابل ہو کہ

☆  موضوعات کا مطلب بیان کر سکے

☆  عملی زندگی سے مثالوں کی نشاندہی کر سکے

☆  اپنی شخصیت اور معاشرے پر موضوعات کے مطابق مثبت اثرات پیدا کرنے کے طریقے بیان کر سکے

☆  اعلیٰ اخلاقی اقدار میں سے

تحمل برداشت۔ قوت ارادی۔ تکبر جذبہ۔ وسیع النظری۔ بے غرض۔ انسانی دوستی حفاظتی۔ شعور۔ پس خرابی۔
کمال انگائی اور خود شناسی کی اہمیت بیان کر سکے

☆  اخلاقیات سے متعلق ہو کر قومی خدمت بہتر طور پر انجام دے سکے

**MATH-223  APPLIED MATHEMATICS -II**

| TOTAL CONTACT HOURS: | | **T** | **P** | **C** |
|---|---|---|---|---|
| **Theory** | **96** | **3** | **0** | **3** |

**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 and minima values.
4. Use principles of Integral Calculus to compute areas and volumes.
5. Acquire proficiency in solving technological problems with mathematical clarity and insight.

**COURSE CONTENTS**

**1.    FUNCTIONS AND LIMITS                                6 HOURS**
    1.1    Constant and variable quantities.
    1.2    Functions and 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.

4.4    Problems.

**5.    DIFFERENTIATIONS OF LOGARITHMIC        6 HOURS
       AND EXPONENTIAL FUNCTIONS**
5.1    Differentiation of In x.
5.2    Differentiation of Log $a^x$.
5.3    Differentiation $a^x$.
5.4    Differentiation $e^x$.
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 and minimum values.
6.4    Methods of finding maxima and 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 AND 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 and perpendicularity.
   12.5    Problems.

**13.    EQUATIONS OF CIRCLE**                                  **6 HOURS**
   13.1    Standard form of equation.
   13.2    Central form of equation.
   13.3    General form of equation.
   13.4    Radius and coordinates of the centre.
   13.5    Problems.

**14.    STATISTICS**                                           **9 HOURS**
   14.1    Concept of mean, median and mode.
   14.2    Standard deviation.
   14.3    Laws of probability.
   14.4    Problems.


**Books Recommended:**

1.  Text Book of Math-223, Vol-I, developed by Curriculum Section, Academics wing TEVTA and published by National Book Foundation (NBF)

**MATH-223   APPLIED MATHEMATICS -II**
**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 xn 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 VARIABLE WITH RESPECT TO ANOTHER**
   6.1   Derive formula for velocity, acceleration and scope 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.
6.5    Solve problems using these formulas.

**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 curve 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 formula.
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 centre 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.

## GenC-212　　Chinese Language-2

**Total contact hours**
Theory　　　　64

**T P C**

Practical　　　　0

2 0 2

**AIMS** There are 20 lessons (including 4-unit reviews) in this course. It is recommended to complete 8 lessons and the unit reviews in 32 class hours. After completing this course, students can master the advanced-basic Chinese language knowledge in the content of the course, and be able to reach and exceed **HSK level THREE**.

**COURSE CONTENTS**

**Lesson 1 Pick up international students at the airport　　　　3 hours**

This lesson introduces grammatical knowledge such as "flexible use of interrogative pronouns" and "basic forms of clutch words", which requires students to use sequential words correctly and understand the contextual meaning of some special words.

**1.  Lesson 2 What would you like to drink　　　　　　　　3 hours**

This lesson introduces the rhetorical question form "can…?" and the related words "not only… but also...", and learn to express your needs correctly in communication.

**2.  Lesson 3 I'm kidding you　　　　　　　　　　　　4 hours**

This lesson explains the fixed structures "more and more", "more A, more B", etc., and understands how to praise in Chinese and how to deal with others' praise.

**3.  Lesson 4 I like winter best　　　　　　　　　　　　4 hours**

Through the description of weather, students can learn the usage of adverbs such as "often" and "always", which express frequency, and compare and describe similar phenomena.

**UNIT REVIEW 1 (INCLUDING TESTS)　　　　　　　2 hours**

Summarize the contents of Lesson 1-4, review key words and grammar knowledge, and help learners really consolidate their mastery. There are tests designed, which can detect what has been learned before, so as to check for leaks and fill gaps.

**4.  Lesson 5 I caught a cold　　　　　　　　　　　　3 hours**

This lesson learns the basic usage of "active" sentence, understands the expressions related to illness and medical treatment, and learns the language communication in hospital scenes.

**5.  Lesson 6 You are really careless　　　　　　　　　3 hours**

Learn and summarize the usage of simple directional complements "V come" and "V leave", and master the basic expression of request and evaluation functions in daily communication.

**6.  Lesson 7 English black tea is healthy and delicious　　　　4 hours**

Understand how to express approximate numbers in Chinese, how to persuade others and how to express their basic attitude.

**7.  Lesson 8 I'm not a shopaholic　　　　　　　　　　4 hours**

This lesson is related to online shopping. Learn the expression "A is A, that is" and learn how to express your views from different angles.

**UNIT REVIEW 2 (INCLUDING TESTS)　　　　　　　2 hours**

This section leads students to review the knowledge points they have learned in the past, and conduct mid-term tests to test students' learning effect.

**8.  Lesson 9 Why did grandparents move　　　　　　　3 hours**

This lesson introduces a life event related to "moving house", the expression of learning conditions and

the extended meaning of directional complement through events.

**9. Lesson 10 Eat hot pot for the first time**                 **3 hours**

This lesson introduces the way of having dinner in China through "hot pot" and some basic situations of Chinese restaurants, so as to help learners get a preliminary understanding of Chinese dining customs.

**10. Lesson 11 Teacher Wang is going to change the house**          **4 hours**

This lesson is related to "housing" in "food, clothing, housing and transportation". While understanding the story, students can learn language knowledge such as hypothetical relationship and overlapping of disyllabic verbs.

**11. Lesson 12 Single Li Wenchao**                               **4 hours**

This lesson introduces emotional problems, learn about young people's concepts of marriage and love, and learn how to compare them in Chinese.

**UNIT REVIEW 3 (INCLUDING TESTS)**             **2 hours**

Review the previous knowledge, students answer questions through the platform, check the learning situation, and help teachers and students analyze their learning situation.

**12. Lesson 13 This is her new home**                        **3 hours**

This lesson introduces the living conditions of young people at present, and understands how to describe the living environment, learn the Chinese expression of concepts such as location and existence.

**13. Lesson 14 Allen's weekend**                               **3 hours**

This lesson introduces school life, understand the sentence structure expressing complete negation, and summarize the usage of three auxiliary words "adjective", "adverb" and "should".

**14. Lesson 15 Fall in love with public square dancing**        **4 hours**

By introducing the living conditions of the elderly in China, students can learn Chinese comparative structure, enumerating relations and various usages of complements.

**15. Lesson 16 Taste English afternoon tea**                **4 hours**

This lesson introduces grammatical knowledge such as "passive" sentence and "adjective reduplication". Through the study of this lesson, students can understand the dining habits of restaurant ordering and national dishes.

**UNIT REVIEW 4 (INCLUDING TESTS)**             **2 hours**

This section is a review test class, leading students to review the knowledge points learned in the past for final tests to test students' learning effect.

**INSTRUCTIONAL OBJECTIVES:-**

Through this course, learners can systematically learn the language knowledge at this stage and cope with general communication, and can communicate on familiar topics and meet the basic communication needs of daily life and study, and gradually understand and be familiar with Chinese communication etiquette, cultural customs, etc.

**Recommended Book**

*Tang Chinese Course- 3*

**MgmC-212        Understanding China**

Course Code: **MgmC-        212**                                                                    **T P C**
Course Name: Understanding China                                                        **2  0  2**

A course about understanding Chinese culture and introducing China's national conditions. It aims to enable international students in China to better understand China, learn Chinese language and culture, enhance understanding of different cultures, and learn about China's geographical history, philosophy, religion, political economy, etc. It covers Chinese geography and history, philosophy and religion, politics and economy, literature and art, science and technology education, medicine, and sports, etc.

**Course Objectives**

At the end of the course, the students are expected to be able to:
• Master the basic overview of China
• Enhance knowledge of Chinese language
• Broaden horizon
• Learn the integration and communication between different cultures

COURSE OUTLINE

| COURSE CONTENTS | Hours |
|---|---|
| **1. Geography** | **4** |

    1.1 China from the perspective of the world
    1.2 China's natural environment
    1.3 China's mountains and rivers (1)
    1.4 China's mountains and rivers (2)
    1.5 City Highlight - Beijing
    1.6 City Highlight - Shanghai
    1.7 City Highlight - Hongkong
    1.8 Natural Landscape (1) Five Mountains, Jiuzhaigou Valley and Zhangjiajie
    1.9 Natural Landscape (2) Xinjiang
    1.10 Natural Landscape (3) Tibet
    1.11 Cultural Tour

    **2. History                                                                            8**

    2.1 Chinese Ancestors
    2.2 Emperor Qin Shihuang
    2.3 Emperor Wu in Han Dynasty
    2.4 Silk Road in Western Han Dynasty
    2.5 Prosperous Period of Tang Dynasty
    2.6 Riverside Scene at Qingming Festival
    2.7 Genghis Khan and Kublai Khan
    2.8 Ming Taizu (the First Emperor of the Ming Dynasty)
    2.9 The Great Voyages of Zheng He
    2.10 Prosperous Period of Qing dynasty (from Kangxi to Qianlong)
    2.11 Opium War

2.12 Sun Yat-sen and Kuomintang
2.13 The Communist Party of China (CPC)
2.14 Mukden Incident (9.18 Incident)
2.15 Mao Zedong and the Founding of the PRC
2.16 Diplomatic Relations of the PRC
2.17 Deng Xiaoping and Reform and Opening-up
2.18 New Era of Socialism with Chinese Characteristics

**3. Philosophy** **4**
3.1 The representative figure of Confucianism - Confucius
3.2 The representative figure of Confucianism - Mencius
3.3 The core concept of Confucianism - ritual
3.4 The core concept of Confucianism - benevolence and benevolent governance
3.5 The core concept of Confucianism - Taoism, reason, and knowledge acquirement by investigation
3.6 Taoism - Lao Tzu's Tao and inaction
3.7 Taoism - Chuang Tzu's equality of things and unfettered
3.8 Other schools of thought - Legalism
3.9 Other schools of thought - Military Strategist

**4. Religion** **4**
4.1 Folk Beliefs and Ancestor Worship
4.2 Taoism
4.3 Buddhism in China
4.4 Buddhist Doctrine, Zen, and Buddhist scenic spots
4.5 Other Religions and China's Religious Policies

**5. National Governance** **4**
5.1 National Flag, National Anthem, and National Emblem
5.2 Administrative divisions
5.3 National Institutions (1)
5.4 National Institutions (2)
5.5 Political Parties (1)
5.6 Political Parties (2)
5.7 Foreign policy

**6. Literature and Art** **4**
6.1 Stages and Genres of Chinese literature
6.2 Pre-Qin Literature
6.3 Tang Poetry
6.4 Song Ci
6.5 Four Great Classical Novels
6.6 Modern Chinese Contemporary Literature (1)
6.7 Modern Chinese Contemporary Literature (2)
6.8 Chinese Opera (1)
6.9 Chinese Opera (2)
6.10 Chinese Opera (3)
6.11 Concept of Chinese Traditional Music
6.12 Characteristics of Chinese Traditional Music and Music Appreciation
6.13 Diversified Modern Chinese Music

**7. Language and Literature**

7.1 Mandarin and Dialect
7.2 Ancient Chinese and Modern Chinese
7.3 Idioms
7.4 Origin and Development of Chinese Characters
7.5 Six Categories of Chinese Characters
7.6 Simplified and Traditional Chinese Characters

**8. Calligraphy and Painting**      **4**

8.1 Definition of Calligraphy
8.2 The Evolution of Chinese Calligraphy - Bone inscriptions and bronze inscriptions
8.3 The Evolution of Chinese Calligraphy - Regular script
8.4 The Evolution of Chinese Calligraphy - Cursive script
8.5 The Evolution of Chinese Calligraphy - Running script
8.6 Calligraphy Creation and the Charm of Calligraphy
8.7 Four Treasures of the Study
8.8 Calligraphy and Other Arts
8.9 Basic Knowledge of Chinese Painting
8.10 Artistic Features of Chinese Painting
8.11 Appreciation of Three Major Themes and Representative Works of Chinese Painting

**9. Economy**      **4**

9.1 Agriculture
9.2 Industry
9.3 Three Major Industries in China
9.4 "Internet plus" - New engine of the Chinese economy
9.5 Digital Economy 2.0
9.6 Belt and Road Initiative

**10. Science and Technology**      **4**

10.1 Four Great Ancient Inventions
10.2 Bronze Ware
10.3 Seismograph
10.4 Ceramics
10.5 Hybrid Rice
10.6 Five-hundred-meter Aperture Spherical Radio Telescope (FAST)
10.7 China High Speed Rail
10.8 Jiaolong Manned Submersible
10.9 Supercomputer Sunway TaihuLight
10.10 Aerospace Science and Technology
10.11 Internet Payment

**11. Education**      **4**

11.1 Imperial Examination System
11.2 Chinese Literature
11.3 China's Examination

11.4 Teaching Chinese to Speakers of Other Languages

**12. Medical and Health                                    4**

12.1 Medical and Health Service System in China
12.2 Traditional Chinese Medicine (TCM)
12.3 History of TCM
12.4 Core Concept of TCM
12.5 Acupuncture and Massage
12.6 TCM and Life (1)
12.7 TCM and Life (2)
12.8 Understanding Chinese Medicine
12.9 Mystery of TCM Treatment
12.10 International Communication of TCM

**13. Sports and Wushu (Chinese Martial Art)                4**

13.1 Traditional Sports - Kite
13.2 Traditional Sports - Archery
13.3 Chinese Women and the Olympic Games
13.4 Taiji Boxing
13.5 Overview of Wushu Films and Dramas
13.6 Wushu Elements in Wushu Films and Dramas
13.7 Cultural Connotation of Chinese Wushu

**14. Traditional Festivals and Chinese Cuisine            4**

14.1 Chinese Traditional Festivals
14.2 Chinese Traditional Festivals-The Spring Festival&The Lantern Festival
14.3 Chinese Traditional Festivals-The Dragon Boat Festivall&The Mid-Autumn 14.4 Festival
14.5 Chinese Cuisine

**15. Historical and Cultural Heritage                      4**

15.1 Human Civilization: "Peking Man" Site at Zhoukoudian
15.2 Dunhuang Mogao Grottoes
15.3 Great Engineering: Great Wall and Dujiangyan Irrigation System
15.4 Royal Tombs: Xiaoling Mausoleum and Imperial Tombs of the Ming and Qing Dynasties
15.5 The Largest Bronze Ware: Simuwu Great Tripod
15.6 Warring States Court Musical Instrument: Chime-Bells of Marquis Yi of the Zeng State
15.7 Types of Chinese Ancient Buildings
15.8 Royal Architecture: The Forbidden City
15.9 Ancient Residential Buildings: Quadrangles
15.10 Chinese Gardens

**16. Intangible Cultural Heritage**                                                    **4**

16.1. Current Status of Intangible Cultural Heritage

16.2 Gesar

16.3 Guqin

16.4 Rural Music and Dance

16.5 Shadow Play

16.6 Cantonese Opera

16.7 Chinese Seal Cutting

16.8 Nanjing Yunjin Brocade

16.9 Twenty-four Solar Terms

16.10 Crosstalk

16.11 Acrobatics

16.12. Protection of Intangible Cultural Heritage

**Total Hours: 64**

**References**:-

- Understanding China( Digital and Paper format), edited by Cheng Aimin, jointly developed by Peking University、Beijing Normal University、Zhejiang University、Tianjin University、Harbin Institute of Technology、Xi'an Jiaotong University、Wuhan University、Chongqing University、Shanghai International Studies University、Dalian Medical University、South China Normal University、Jiangsu Normal University and Tang International Education Group, published by Shanghai Foreign Language Education Press,  recommended by China Association for International Education (CAFSA)

# MgmC- 212 – Understanding China

## INSTRUCTIONAL OBJECTIVES

1. Understand the basic geography of China and some famous Chinese cities

2. Understand the unique natural and cultural landscape

3. Master basic knowledge of Chinese history and important historical figures

4. Understand the basic context and major issues in the development of Chinese history

5. Understand the main schools of Chinese traditional philosophy and their representatives

6. Understand the relevant core concepts

7. Master the influence of Chinese philosophy on the mindset and lifestyle of Chinese people

8. Understand the development and spread of Taoism, Buddhism, Islamism and Christianity

9. Understand the current status and policies of religious in China

10. Master the basic knowledge in seven videos

11. Describe the main contents of China's political system in Chinese

12. Compare the similarities and differences between China's political system and home country

13. Correct and comprehensive understanding of China's political system

14. Understand knowledge related to Chinese literature

15. Understand the inheritance and absorption of Chinese contemporary music to traditional music culture

16. Experience the characteristics of Chinese language

18. Understand the language and text of China as a whole

19 Understand the evolution of Chinese calligraphy

20. Understand the basic knowledge of Chinese painting and appreciation of representative works

21. Learn knowledge and information in related fields

22. Understand the logic and reasons behind the development of China's economy

23. Understand the ancient and modern Chinese scientific and technological civilization

24. Understand the unique and long-standing Chinese education

25. Master the core concepts of harmony between man and nature, five elements of qi, yin and yang and the basic principles of health preserving in four seasons

26. 5. Familiarize with the efficacy of acupuncture and massage and the nature and function of traditional Chinese medicine

27. Understand the Chinese medical service system; Characteristics of Tibetan medicine, Mongolian

medicine, Hui medicine and Zhuang medicine

28. Understand the development history of TCM

29 International communication of traditional Chinese medicine science

30. Learn the development history of Chinese traditional sports

31. Master Chinese traditional sports such as kite and archery and their related cultural connotations

32. Understand the characteristics and advantages of modern competitive sports in China

33. Understand the spiritual connotation of Chinese Wushu

34. Understand the diet of traditional Chinese festivals

35. Understand the basic situation of Chinese historical and cultural heritage

36. Know important ancient sites and cultural relics: Peking Man Site Zhoukoudian, Dunhuang Mogao Grottoes, Great Wall, Dujiangyan Irrigation System, 37. Imperial Tombs of the Ming and Qing Dynasties, Simuwu Great Tripod, Chime-Bells of Marquis Yi of the Zeng State, etc.

38. Understand the historical and cultural value of cultural heritage

39. Master the basic situation, basic characteristics, and main types of Chinese ancient buildings

40. Familiarize with representative ancient buildings, and know important ancient sites and cultural relics: Peking Man Site Zhoukoudian, 41. Dunhuang Mogao Grottoes, Great Wall, Dujiangyan Irrigation System, Imperial Tombs of the Ming and Qing Dynasties, Simuwu Great Tripod, Chime-Bells of Marquis Yi of the Zeng State, etc.

42. Understand the historical and cultural value of ancient buildings

43. Able to distinguish different architectural and garden styles and features

44. Able to read and explain relevant key words

45. Understand the development, current situation, and protection of China's intangible cultural heritage

**PHY-242   APPLIED MECHANICS**

| Total Contact Hours | | | T | P | C |
|---|---|---|---|---|---|
| Theory: | 32 Hours | | 1 | 3 | 2 |
| Practical: | 96 Hours | | | | |

**AIMS** 1.   Apply the concepts of Applied Physics to understand Mechanics
2.   Apply laws and principles of Mechanics in solving technological problems
3.   Use the knowledge of App. Mechanics in learning advance technical courses.
4.   Demonstrate efficient skill of practical work in Mechanics Lab.

**COURSE CONTENTS**

**1.   MEASUREMENTS**                                                          **2 Hrs**
    1.1   Review: Dimensional formula of Equations of Motion
    1.2   Review: Systems of measurement, S.I. Units, conversion
    1.3   Significant Figures
    1.4   Degree of accuracy

**2.   EQUILIBRIUM OF CONCURRENT FORCES**                                      **3 Hrs**
    2.1   Concurrent forces
    2.2   Addition and Resolution of Vectors
    2.3   Toggle Joint, Hanging Chains
    2.4   Roof Trusses, Cranes.
    2.5   Framed structures

**3.   MOMENTS AND COUPLES:**                                                  **2 Hrs**
    3.1   Principle of Moments - Review
    3.2   Levers
    3.3   Safety valve
    3.4   Steel yard
    3.5   Parallel forces, couple
    3.6   Torque

**4.   EQUILIBRIUM OF NON-CONCURRENT FORCES:**                                 **3 Hrs**
    4.1   Non-concurrent forces
    4.2   Free body diagram
    4.3   Varignon's theorem
    4.4   Conditions of total Equilibrium.
    4.5   Ladders

**5.   MOMENT OF INERTIA:**                                                    **3 Hrs**
    5.1   Review: Rotational Inertia
    5.2   Moment of Inertia, Theorems

| 5.3 | Moment of Inertia of symmetrical bodies | |
| 5.4 | M.I. of Fly wheel with applications | |
| 5.5 | Energy stored by Fly wheel | |

**6.**    **FRICTION:**                                           **2 Hrs**

- 6.1    Review: Laws of friction
- 6.2    Motion of body along an inclined plane (up & down)
- 6.3    Rolling friction & Ball Bearings
- 6.4    Fluid Friction, Stokes' Law

**7.**    **WORK, ENERGY AND POWER**                          **3 Hrs**

- 7.1    Work-Energy relationship
- 7.2    Work done by variable force.
- 7.3    Power
- 7.4    I.H.P, B.H.P and Efficiency
- 7.5    Dynamometer.

**8.**    **TRANSMISSION OF POWER:**                       **3 Hrs**

- 8.1    Belts, Ropes.
- 8.2    Chains.
- 8.3    Gears.
- 8.4    Clutches, functions and types with application

**9.**    **MACHINES:**                                            **3 Hrs**

- 9.1    Efficiency of machines
- 9.2    Inclined plane - Review
- 9.3    Reversibility of machines
- 9.4    Single purchase crab
- 9.5    Double purchase crab.
- 9.6    Worm and worm wheel.
- 9.7    Differential Screw Jack.
- 9.8    Differential Pulley, Wheel and Axle

**10.**    **VIBRATORY MOTION:**                           **2 Hrs**

- 10.1    S.H.M. - Review
- 10.2    Pendulums
- 10.3    Speed Governors.
- 10.4    Helical spring.
- 10.5    Cams
- 10.6    Quick return motion

**11.**    **ELASTICITY:**                                       **3 Hrs**

11.1    Three Modulii of Elasticity
11.2    Loaded Beams, Types of Beam & Loads
11.3    Bending Stress
11.4    S.F & B.M diagram
11.5    Torsion and Torsional Stresses

**12.    SIMPLE MECHANISM:**                                                    **1 Hr**
12.1    Introduction
12.2    Kinematic link or Element
12.3    Kinematic pair and types.
12.4    Kinematic chains and types.

**13.    VELOCITY IN MECHANISM:**                                               **2 Hrs**
13.1    Introduction.
13.2    Instantaneous centre.
13.3    Instantaneous velocity.
13.4    Velocity of a link by instantaneous centre method.
13.5    Relative velocity of two bodies in the straight line
13.6    Velocity of a link by relative velocity method.

**BOOKS RECOMMENDED:**
1.  Text Book of Phy-242, Vol-I, developed by Curriculum Section, Academics wing TEVTA and published by National Book Foundation (NBF)

**PHY 242      APPLIED MECHANICS**

**INSTRUCTIONAL OBJECTIVES:-**

1.      **USE THE CONCEPTS OF MEASUREMENT IN PRACTICAL SITUATIONS/PROBLEMS**
        1.1      Explain Dimensional formula
        1.2      Explain systems of measurement
        1.3      Use concept of significant figures and degree of accuracy to solve problems

2.      **USE THE CONCEPT OF ADDITION AND RESOLUTION OF VECTORS TO PROBLEMS ON EQUILIBRIUM INVOLVING CONCURRENT FORCES**
        2.1      Describe concurrent forces
        2.2      Explain resolution of vectors
        2.3      Use the analytical method of addition of vectors for solving problems.
        2.4      Use the graphical method of addition of vectors for solving problems.
        2.5      Solve problems on forces with emphasis on roof trusses, cranes simple frames and framed structures.

3.      **USE THE PRINCIPLE OF MOMENTS AND CONCEPT OF COUPLE TO SOLVE PROBLEMS.**
        3.1      Describe the principle of moments.
        3.2      Use the principle of moments to solve problems on compound levers, safety valve, steel-yard.
        3.3      Describe couple and torque.
        3.4      Use the concept to solve problems on torque.

4.      **USE THE LAWS OF TOTAL EQUILIBRIUM OF FORCES TO SOLVE PROBLEMS INVOLVING FORCES IN EQUILIBRIUM.**
        4.1      Distinguish between concurrent and non-concurrent forces.
        4.2      Prepare a free body diagram of an object or a structure.
        4.3      Explain Varignon's theorem.
        4.4      Explain the second condition of equilibrium.
        4.5      Use laws of total equilibrium to solve problems on forces involving framed structure and ladders.

5.      **USE CONCEPTS OF MOMENT OF INERTIA TO PRACTICAL SITUATIONS AND PROBLEMS.**
        5.1      Explain moment of inertia.
        5.2      Explain the theorems of Parallel and perpendicular Axis.
        5.3      Describe the M.I. of regular bodies
        5.4      Explain M.I. of Fly wheel

5.5    Explain Energy stored by Fly Wheel
5.6    Use these concepts to solve simple problems.

**6.    UNDERSTAND THE CONCEPTS AND LAWS OF SOLID AND FLUID FRICTION.**
6.1    Define Coefficient of friction between a body placed on an inclined plane and the surface.
6.2    Explain motion of a body placed on an inclined plane
6.3    Calculate the force needed to move a body up and down an inclined plane.
6.4    Explain rolling friction and use of ball bearings.
6.5    Describe fluid friction and Stoke's law.

**7.    UNDERSTAND WORK, ENERGY AND POWER.**
7.1    Derive work-energy relationship
7.2    Use formulae for work done by a variable force to solve problems.
7.3    Explain Power, I.H.P, B.H.P and efficiency.
7.4    Describe dynamometers.
7.5    Use the concepts to solve problems on power and work-energy

**8.    UNDERSTAND TRANSMISSION OF POWER THROUGH ROPES AND BELTS.**
8.1    Describe the need for transmission of power.
8.2    Describe methods of transmission of power.
8.3    Describe transmission of power through ropes and belts.
8.4    Write formula for power transmitted through ropes and belts.
8.5    Describe transmission of power through friction gears and write formula.
8.6    Describe transmission of power through chains and toothed wheels/gears.
8.7    Use the formulae to solve/problems on transmission of power.
8.8    Describe types and function of clutches with applications

**9.    USE THE CONCEPTS OF MACHINES TO PRACTICAL SITUATIONS.**
9.1    Explain theoretical, actual mechanical advantage and efficiency of simple machines.
9.2    Use the concept to calculate efficiency of an inclined plane.
9.3    Describe reversibility of machines.
9.4    Calculate the efficiency of:
       i.      Single purchase crab.
       ii.     Double purchase crab.
       iii.    Worm and worm wheel.
       iv.     Differential screw jack, Diff. Pulley, Wheel and Axle.
9.5    Use the formulae to solve the problems involving efficiency, M.A of the above machines.

**10.    USE THE CONCEPTS OF VIBRATORY MOTION TO PRACTICAL SITUATIONS.**
10.1    Define vibratory motion giving examples.
10.2    Describe circular motion and its projection on diameter of the circular path.

10.3    Relate rotatory motion to simple vibratory motion.

10.4    State examples of conversion of rotatory motion to vibratory motion and vice versa.

10.5    Describe speed governors, cams quick return motion.

10.6    Derive formulae for position, velocity and acceleration of a body executing S.H.M.

10.7    Use the concept of S.H.M to helical springs.

10.8    Use the concept S.H.M to solve problems on pendulum.


**11.    UNDERSTAND BENDING MOMENTS AND SHEARING FORCES.**

11.1    Define three types of stresses and modulii of elasticity.

11.2    Describe types of beams and loads.

11.3    Explain shearing force and bending moment.

11.4    Use these concepts to calculate S.F and B.M in a given practical situation for point loads, uniformly distributed loads.

11.5    Prepare S.F and B.M diagram for loaded cantilever and simply supported beams.

11.6    Describe torsion and torsional stresses giving formula


**12.    UNDERSTAND SIMPLE MECHANISMS.**

12.1    Define simple mechanisms.

12.2    Define kinematics.

12.3    Explain kinematic link or element.

12.4    Explain kinematic chains.

12.5    Distinguish between types of kinematic chains.


**13.    UNDERSTAND THE METHOD OF FINDING VELOCITY IN MECHANISMS.**

13.1    Explains relative velocity.

13.2    Explain instantaneous center.

13.3    Explain instantaneous velocity.

13.4    Explain the method of finding velocity of a link by:

i.      Relative velocity method.

ii.     Instantaneous center method.


**PHY-242     APPLIED MECHANICS**

**LIST OF EXPERIMENTS**

1. Find the weight of the given body using Law of Polygon of forces.
2. Find unknown forces in a given set of concurrent forces in equilibrium using Grave-sands apparatus
3. Set a jib crane and analyse forces in its members
4. Set a Derrick Crane and analyse forces in its members
5. Study forces shared by each member of a Toggle Joint
6. Set a Roof Truss and find forces in its members
7. Verify Principle of Moments in a compound lever
8. Calibrate a steelyard
9. Find the Reactions at the ends of a loaded beam
10. Use Reaction of Beams apparatus to study resultant of Parallel forces
11. Find the Moment of Inertia of a Flywheel
12. Find the angle of reaction for a wooden block placed on an inclined plane
13. Find the B.H.P. of a motor
14. Study the transmission of Power through friction gears
15. Study the transmission of power through belts
16. Study the transmission of Power through toothed wheels
17. Study the function of clutches
18. Find M.A. and efficiency of worm and worm wheel
19. Find M.A. and efficiency of differential wheel and axle
20. Find the efficiency of a screw
21. Find the efficiency of a differential pulley
22. Study conversion of rotary motion to S.H.M.  using S.H.M. Model/Apparatus
23. Study conversation of rotary motion to vibratory motion of the piston in a cylinder
24. Study the reciprocating motion
25. Study the working of cams
26. Study the quick return motion
27. Compare the Elastic constants of the given wires
28. Verify Hooke's Law using Helical Spring
29. Find the coefficient of Rigidity of a wire using Maxewell's needle
30. Find the coefficient of Rigidity of a round bar using torsion apparatus
31. Find the coefficient of Rigidity of a rectangular bar using Deflection of Beam Apparatus
32. Determine S.F. and B.M. in a loaded cantilever (Point Loads)
33. Determine S.F. and B.M. in a simply supported Beam (Point Loads)
34. Determine S.F. and B.M. in a simply supported Beam (Point loads and uniformly distributed load)
35. Determine S.F. and B.M. in a simply supported Beam (Point loads and uniformly distributed)
36. Study working and function of link mechanism of different types

**Mgm-211 BUSINESS COMMUNICATION**

|  | T | P | C |
|---|---|---|---|
| **Total CONTACT Hours** | 1 | 0 | 1 |
| **Theory 32 Hrs.** | | | |

**PRE-REQUISITE:** The students shall already be familiar with the language concerned.

**AIMS**: The course has been designed to enable the students to:-
1. Develop communication skills.
2. Understand basic principles of good and effective business writing in commercial and industrial fields.
3. Develop knowledge and skill to write technical report with confidence and accuracy.

**COURSE CONTENTS**

**1.** **COMMUNICATION PROCESS** **6 HOURS**
1.1 Purposes of communication.
1.2 Communication process.
1.3 Distortions in communication.
1.4 Consolidation of communiqué.
1.5 Communication flow.
1.6 Communication of self-development.

**2.** **COMMUNICATION SKILLS** **6 HOURS**
2.1 Significance of speaking.
2.2 Verbal and non-verbal messages.
2.3 Strategic steps of speaking.
2.4 Characteristics of effective oral messages.
2.5 Communication trafficking.
2.6 Oral presentation.

**3.** **QUESTIONING SKILLS** **3 HOURS**
3.1 Nature of question.
3.2 Types of questions.
3.3 Characteristics of a good question.
3.4 Questioning strategy.

**4.** **LISTENING SKILLS** **5 HOURS**
4.1 Principles of active listening.
4.2 Skills of active listening.
4.3 Barriers to listening.
4.4 Reasons of poor listening.
4.5 Giving feedback.

**5.** **INTERVIEWING SKILLS** **3 HOURS**
5.1 Significance of interviews.
5.2 Characteristics of interviews.

5.3    Activities in an interviewing situation.
5.4    Types of interviews.
5.5    Interviewing strategy.

**6.    REPORT WRITING**                                    **3 HOURS**
6.1    Goals of report writing.
6.2    Report format.
6.3    Types of reports.
6.4    Report writing strategy.

**7.    READING COMPREHENSION**                             **2 HOURS**
7.1    Reading problems.
7.2    Four reading skills.

**8.    GROUP COMMUNICATION**                               **4 HOURS**
8.1    Purposes of conducting meetings.
8.2    Planning a meeting.
8.3    Types of meetings.
8.4    Selection of a group for meeting.
8.5    Group leadership skills.
8.6    Running a successful meeting.
8.7    Active participation techniques.

**Books Recommended:**

1.    Sh. Ata-ur-Rehman, Effective Business Communication and Report Writing.
2.    Ulman J. N. Cloud JR. Technical Reporting.

# Mgm-211  BUSINESS COMMUNICATION

**INSTRUCTIONAL OBJECTIVES:-**

1. **UNDERSTAND THE COMMUNICATION PROCESS**
   1.1     State the benefits of two way of communication.
   1.2     Describe a model of communication process.
   1.3     Explain the major communication methods used in organizations.
   1.4     Identify the barriers to communication and methods to overcoming these barriers.
   1.5     Identify misconceptions about communication.

2. **UNDERSTAND THE PROCESS OF ORAL**
   2.1     Identify speaking situations with other people.
   2.2     Identify the strategic steps of speaking.
   2.3     Identify the characteristics of effective oral messages.
   2.4     State the principles of one-way communication.
   2.5     State the principles of two-way communication.
   2.6     Identify the elements of oral presentation skills.
   2.7     Determine the impact of non-verbal communication on oral communication.

3. **DETERMINE THE USES OF QUESTIONING SKILLS TO GATHER AND CLARIFY INFORMATION IN THE ORAL COMMUNICATION PROCESS**
   3.1     Identify different types of questions.
   3.2     Determine the purpose of each type of question and its application.
   3.3     Identify the hazards to be avoided when asking questions.
   3.4     Demonstrate questioning skills.

4. **DEMONSTRATE THE USE OF ACTIVE LISTENING SKILLS IN THE ORAL COMMUNICATION PROCESS**
   4.1     State the principles of active listening.
   4.2     Identify skills of active listening.
   4.3     Identify barriers to active listening.
   4.4     State the benefits of active listening.
   4.5     Demonstrate listening skills.
   4.6     Explain the importance of giving and receiving feedback.

5. **DETERMINE THE APPROPRIATE INTERVIEW TYPE FOR THE SPECIFIC WORK-RELATED SITUATION AND CONDUCT A WORK-RELATED INTERVIEW**
   5.1     State the significance of interviews.
   5.2     State the characteristics of interviews.
   5.3     Explain the activities in an interviewing situation.
   5.4     Describe the types of interviews.
   5.5     Explain the interviewing strategy.
   5.6     Prepare instrument for a structured interview.

**6.**     **PREPARE A REPORT OUTLINE BASED ON SUBJECT MATTER AND AUDIENCE**
6.1     Identify the different types of reports.
6.2     Determine when to use an informal or formal report presentation.
6.3     Identify the stages of planning a report.
6.4     Identify the parts of a report and chose the parts appropriate for each type of report.
6.5     Draft a report outline.

**7.**     **DEMONSTRATE READING COMPREHENSION**
7.1     Identify major reading problems.
7.2     Identify basic reading skills.
7.3     State methods of previewing written material.
7.4     Identify methods of concentration when reading.
7.5     Demonstrate reading comprehension.

**8.**     **UNDERSTAND THE PRINCIPLES OF GROUP COMMUNICATION**
8.1     State the purposes and characteristics of major types of meetings.
8.2     Explain responsibilities of a meeting/committee.
8.3     Identify problems likely to be faced at meeting and means to overcome these problems.
8.4     Distinguish between content and process at meetings.
8.5     Explain the key characteristics of a good group facilitator.

**TD-242 YARN FORMATION**

| Total Contact Hours: | | **T** | **P** | **C** |
|---|---|---|---|---|
| **Theory** | **: 32** | **1** | **3** | **2** |
| **Practicals** | **: 96** | | | |

**Pre-requisite**: Textile Fundamentals.

**AIMS:**

The student will be able to understand the machines used in the processes in the production of staple yarn

between carding and spinning, the comber, the draw frame and the roving frame. Understand the technical

and technological aspects of ring spinning.

To enable student to understand woolen and worsted spinning.

| 1. | GENERAL DESCRIPTION OF YARNS | 2 HOURS |
|---|---|---|
| | 1.1 Staple yarns. | |
| | 1.2 Filament yarns. | |
| | 1.3 Warp and weft yarn. | |
| | 1.4 Knitting yarn. | |

| 2. | OPENING AND PICKING PROCESS | 4 HOURS |
|---|---|---|
| | 2.1 Purpose of opening and picking. | |
| | 2.2 Kinds of opening and picking machines. | |
| | 2.3 Opening and picking machines operations. | |
| | 2.4 Lap Quality. | |

| 3. | CARDING PROCESSES | 4 HOURS |
|---|---|---|
| | 3.1 Purpose of carding. | |
| | 3.2 Card theory and processing. | |
| | 3.3 Card silver quality. | |
| | 3.4 High Production Carding. | |

| 4. | DRAWING PROCESS | 2 HOURS |
|---|---|---|
| | 4.1 Purpose of Drawing frame. | |
| | 4.2 Drawing frame operation theory. | |
| | 4.3 Drawing frame quality and efficiency. | |

| 5. | COMBER PREPARATION AND COMBING PROCESSES | 2 HOURS |
|---|---|---|
| | 5.1 Purpose of comber preparation and comber processes. | |
| | 5.2 Comber preparation and machine theory. | |
| | 5.3 Comber operations. | |

6.  ROVING PROCESSES                                    2 HOURS
    6.1    Introduction.
    6.2    Purpose of roving frame.
    6.3    Conventional roving frames.
    6.4    High speed roving frame.

7.  SPINNING PROCESS                                     4 HOURS
    7.1    Purpose of spinning frame.
    7.2    Spinning frame mechanical description.
    7.3    Spinning frames use and requirements.

8.  WOOLEN AND WORSTED YARN SPINNING PROCESS            2 HOURS
    8.1    Stages in the manufacture of woolen and worsted yarn.
    8.2    Woolen yarn manufacturing.
    8.3    Worsted yarn manufacturing.

9.  UNCONVENTIONAL SPINNING PROCESS                     2 HOURS
    9.1    Open and spinning.
    9.2    Friction spinning.
    9.3    Air jet spinning.

10. YARN CLASSIFICATION                                 2 HOURS
    10.1   Spun and filament yarns.
    10.2   Simple yarn,
    10.3   Yarn twist.
    10.4   Fancy yarns.

11. SMOOTH AND BULKY YARNS                              2 HOURS
    11.1   Smooth filament yarns.
    11.2   Bulkyarn.
    11.3   Stretch yarns.
    11.4   Textured yarns.
12. SPUN  YARNS AND BLENDS                              2 HOURS
    12.1   Carded and combed spun yarn.
    12.2   Blend levels.
    12.3   Blended methods.
13. TWISTING PROCESS                                    2 HOURS
    13.1   Introduction.
    13.2   Types of Twist yarn.
    13.3   Types of Twister Frames.
    13.4   Twist frames for filament yarns.

**Books Recommended**:
1.    Cotton Spinning (William Tagged).
2.    Practical Guide to Ring Spinning (Textile Institute)
3.    Textiles (Ann. L. Langford).

# TD-242 YARN FORMATION

**Instructional Objectives:**

1. UNDERSTAND THE GENERAL DESCRIPTION OF TEXTILE YARNS.
   1.1  Explain staple yarn.
   1.2  Explain Filament yarn.
   1.3  Differentiate between warp and weft yarn.
   1.4  Explain knitting yarn.
   1.5  Explain plied yarn.

2. UNDERSTAND OPENING AND PICKING PROCESS
   2.1  Explain purpose of opening and picking.
   2.2  Enlist types of opening and picking machines.
   2.3  Explain operation of opening and picking.
   2.4  Explain lap and quality of lap.

3. UNDERSTAND THE SCOPE AND SIGNIFICANCE OF CARDING PROCESS
   3.1  Explain purpose of carding.
   3.2  Describe card theory and processing of card silver.
   3.3  Explain importance of card silver quality.
   3.4  Describe high production carding.

4. UNDERSTAND THE PROCESS OF DRAWING
   4.1  Explain purpose of drawing frame.
   4.2  Explain drawing frame operation and theory.
   4.3  Explain drawing frame silver quality and efficiency.

5. UNDERSTAND IMPORTANCE OF COMBER PREPARATION AND COMBING PROCESSES
   5.1  Explain purpose of comber preparation and its process.
   5.2  State comber preparation machine and its theory.
   5.3  Describe comber operation.

6. UNDERSTAND THE PROCESS OF ROVING
   6.1  Explain roving process.
   6.2  State purpose of roving operation.
   6.3  Explain conventional roving frame.
   6.4  Describe high speed roving frame.

7. UNDERSTAND THE OPERATION OF SPINNING FRAME
   7.1  Explain purpose of spinning frame.
   7.2  Describe spinning frame.
   7.3  Explain the use of spinning frame and its requirements.

8. UNDERSTAND WOOLEN AND WORSTED SPINNING
   8.1    Describe stages in the manufacture of woolen and worsted yarn.
   8.2    Explain wool spinning process.
   8.3    Explain worsted spinning process.

9. UNDERSTAND THE DEVELOPMENT IN SPINNING OPERATION
   9.1    Describe open and spinning.
   9.2    Explain friction spinning.
   9.3    Explain Air jet spinning.

10. UNDERSTAND THE CLASSIFICATION OF YARN
   10.1   Explain spun and filament yarn.
   10.2   Describe simple yarn.
   10.3   Explain yarn twist.
   10.4   Enlist fancy yarns.

11. UNDERSTAND SMOOTH AND BULKY YARNS
   11.1   Explain smooth filament yarn.
   11.2   Describe bulk yarn.
   11.3   Explain stretch yarn.
   11.4   Explain textured yarn.

12. UNDERSTAND BLENDING AND BLENDED YARN
   12.1   Differentiate between carded and combed yarn.
   12.2   Explain blend level in the blending process.
   12.3   Describe different blending methods.

13. UNDERSTAND CONCEPT OF TWISTING PROCESS
   13.1   Explain twisting and doubling.
   13.2   Enlist types of twisted yarns.
   13.3   Explain twister frames.
   13.4   Explain twister frames used for filament.

# TD-242 YARN FORMATION

**Total Contact Hours: 96**

**List of Practicals:**

1.      Test a lap for rash content and per unit length.

2.      Passage of cotton through card.

3.      Machine parts study in detail of card.

4.      Test card sliver for weight per unit length along with.

5.      Study the construction of card clothing.

6.      Conduct a vast extraction text on card and comments on results.

7.      Passage and line diagram of drawing frame.

8.      Compare the fibre disposition in the card and draw frames slivers and the regularity in weight per unit length of each sliver.

9.      Study of various motion in draw frame.

10.     Passage and line diagram of ring frame.

11.     Detail study and working of different parts in detail on ring frame.

12.     Examination of 20s county yarn examining machine.

13.     Examination of 30s count yarn on yarn examining machine.

14.     Roller setting for different varieties of cotton.

15.     Common types of rollers setting and its weight system.

16.     Study of wool spinning in a woolen mill.

17.     Study of worsted spinning in a worsted spinning mill.

18.     Examining of woolen and worsted yarn on yarn examination machine.

**TW-224     FABRIC MANUFACTURING TECHNOLOGY**

|   | T | P | C |
|---|---|---|---|
|   | 2 | 6 | 4 |

**TOTAL CONTACT HOURS:**
    **Theory     :     64   Hours**
    **Practical   :     192  Hours**
**Pre-requisite:** TT-123 Fundamental of Textile Technology
**AIMS:**
1.    To acquaint the students with the elementary principles of weaving Technology.
2.    To teach the student proper handling and operation of Machine.
**DETAIL COURSE CONTENTS:**

**1.    INTRODUCTION TO WEAVING    4 HOURS**
    1.1   History.
    1.2   Weaving Machinery Sequence of operation (Warping to Inspection and folding).
**2.    WARPING    8 HOURS**
    2.1   Types of warping.
    2.2   Study of creel and its types
    2.3   Study of Head stock
**3.    SIZING    8 HOURS**
    3.1   Purpose of sizing the yarn.
    3.2   Components of sizing machine.
    3.3   Tension zone on sizing machine.
    3.4   Size recipe/ingredient.
**4.    DRAWING-IN    4 HOURS**
    4.1   Objectives
    4.2   Methods of drawing-in
**5.    LOOM MOTION    8 HOURS**
    5.1   Primary Motion of loom.
    5.2   Secondary Motion loom.
    5.3   Supplementary Motion of loom.
**6.    WEAVING    16 HOURS**
    6.1   Introduction of weaving
    6.2   Types of loom.
    6.3   Shuttle loom.
    6.4   Terry loom.
    6.5   Shuttle less loom.
        6.5.1   Air jet loom.
        6.5.2   Water jet loom.
        6.5.3   Rapier loom
        6.5.4   Projectile loom.

6.5.5      Multiphase Loom

**7.**    **DOBBY MOTION & JACQUARD MOTION**        **4 HOURS**
     7.1    Types of dobbies.
     7.2    Types of Jacquard

**8.**    **DENIM WEAVING**        **6 HOURS**
     8.1    Process of Denim weave
     8.2    Features of Denim fabric

**9.**    **FOLDING AND INSPECTION**        **6 HOURS**
     9.1    Inspection Methods
     9.2    Grading System
     9.3    Study of different fabric Faults

**TEXT / REFERENCE BOOKS:**
1.    Textile (Fibre to Fabric) by Bernard (Mc-Graw Hill).
2.    Manual of Cotton Spinning by A.E. Debarr (The Textile Institute U.K.)
3.    Practical Weaving Course by P.R. Jarvis (India).
4.    Cotton Spinning by William Scott Taggart. (India).

**TW-224   FABRIC MANUFACTURING TECHNOLOGY**
**INSTRUCTIONAL OBJECTIVE:**
1. **WEAVING**
   1.1   Elaborate History of weaving.
   1.2   State Weaving process Sequence of operation (Warping to Inspection and folding).
2. **WARPING**
   2.1   Define Types of warping.
   2.2   Explain creel and its types
   2.3   Define Head stock
3. **SIZING**
   3.1   Narrate purpose of sizing of yarn.
   3.2   Explain construction of sizing machine.
   3.3   Explain working of sizing machine.
4. **DRAWING-IN**
   4.1   Define Objectives of drawing-in process
   4.2   Explain Design technique used in Drawing-in process
   4.3   State methods of drawing-in process.
5. **LOOM MOTION**
   5.1   Define Primary Motion of loom
   5.2    Describe Secondary Motion of loom.
   5.3   Explain Supplementary Motion of loom.
6. **WEAVING**
   6.1   Define weaving process.
   6.2   Explain types of loom.
   6.3   Explain working of Shuttle loom.
   6.4   Explain working of Terry loom.
   6.5   Explain working of Shuttle less loom.
       6.5.1      Explain working of Air jet loom.
       6.5.2      Explain working of Water jet loom.
       6.5.3      Explain working of Rapier loom
       6.5.4      Explain working of Projectile loom.
       6.5.5      Explain working of Multiphase Loom
7. **DOBBY MOTION & JACQUARD MOTION**
   7.1   State Types of dobbies.
   7.2   Explain different types of Jacquard
8. **DENIM WEAVING**
   8.1   Explain process of Denim Fabric
   8.2   Explain different stages of denim process
9. **FOLDING AND INSPECTION**
   9.1   Elaborate Inspection Methods
   9.2   Narrate Grading System
   9.3   Deduction of different fabric Faults

**TW-224   FABRIC MANUFACTURING TECHNOLOGY**
**Practical   : 192 Hours.**

**LIST OF PRACTICALS:**

| | | |
|---|---|---|
| 1. | General survey of weaving system and machinery layout plan. | 12 HOURS |
| 2. | Study of Warping Machine. | 9 HOURS |
| 3. | Study of Warping Faults. | 9 HOURS |
| 4. | Study of Sizing Machine. | 9 HOURS |
| 5. | Study of Sizing Faults. | 9 HOURS |
| 6. | Make Sizing solution. | 9 HOURS |
| 7. | Study of primary motions and their diagrams. | 9 HOURS |
| 8. | Study of power transmission of loom and its diagram. | 9 HOURS |
| 9. | Study of shedding motion and picking motion relation of each. | 9 HOURS |
| 10. | Preparation of heald frames, and reed and its calculation. | 9 HOURS |
| 11. | Study of tappets and their setting. | 9 HOURS |
| 12. | Study of knotting process on loom. | 9 HOURS |
| 13. | Take up motion-calculation and diagram. | 9 HOURS |
| 14. | Study of let off motion. | 9 HOURS |
| 15. | Study of Beating up motion. | 9 HOURS |
| 16. | Operation and diagram of dobby parts. | 9 HOURS |
| 17. | Study of warp and weft stop motion. | 9 HOURS |
| 18. | Study of different types of selveges. | 9 HOURS |
| 19. | Study of Shuttle box with diagram. | 9 HOURS |
| 20. | Detail study of crank sley, loose reed and back up. | 9 HOURS |
| 21. | Study of different fabric Faults. | 9 HOURS |

**TD-235 COLORATION-I**

| | | | T | P | C |
|---|---|---|---|---|---|
| **Total Contact Hours:** | | | **T** | **P** | **C** |
| **Theory** | **: 96** | | **3** | **6** | **5** |
| **Practical** | **: 192** | | | | |

**AIMS:** After studying this course the student will be able to:

Understand the physical, chemical and mechanical principles behind the application of color.

Become acquainted with the Dyes Chemistry and the mechanical principles behind the equipment used

to effect transfer of these chemicals onto the Fabric.

**Topics:**

| | | |
|---|---|---|
| 1. | PRE-TREATMENT | 2 HOURS |
| | 1.1 Objective of pre-treatment. | |
| | 1.2 Sequence of pre-treatment process. | |
| 2. | SINGEING | 2 HOURS |
| | 2.1 Method of singeing. | |
| | 2.2 Singing machines. | |
| 3. | DESIZING | 2 HOURS |
| | 3.1 Introduction to desizing. | |
| | 3.2 Oxidizing method of desizing. | |
| | 3.3 Enzymatic desizing. | |
| | 3.4 Hot washing with Detergent. | |
| 4. | SCOURING | 2 HOURS |
| | 4.1 Introduction to scouring process. | |
| | 4.2 Soaps and detergents. | |
| 5. | MERCERIZATION | 2 HOURS |
| | 5.1 The Mercerization process. | |
| | 5.2 The dead cotton problem. | |
| 6. | BLEACHING | 4 HOURS |
| | 6.1 Sodium Hypo chlorite bleach. | |
| | 6.2 Hydrogen peroxide bleach. | |
| | 6.3 Stabilizers. | |
| 7. | FLUORESCENT BRIGHTNERS | 3 HOURS |
| | 7.1 Fibre to which fluorescent brightner be applied. | |
| | 7.2 Application of Fluorescent brightner. | |
| | 7.3 Fluorescence. | |
| | 7.4 Properties of Fluorescent brightners. | |

8.  THEORY AND CLASSIFICATION DYES                  10 HOURS
    8.1   Classification of Dyes.
    8.2   General Theory of Dyeing.
    8.3   The Dye Molecule.
    8.4   The Role of Water.
    8.5   The Role of Electrolyte.
    8.6   The Role of Temperature.

9.  DIRECT DYE                                       10 HOURS
    9.1   Introduction to Direct Dye.
    9.2   Parameters effecting Dye absorption and
          leveling agent.
    9.3   Classification and applications of Direct Dye
          according to Dyeing behaviour.

10. REACTIVE DYES                                    9 HOURS
    10.1  Introduction to Reactive Dyes.
    10.2  Dyeing of natural cellulose fibre
    10.3  Dyeing of protein fibre.
    10.4  Properties of Reactive Dyes.
    10.5  Stripping of Reactive.

11. SULPHUR DYES                                     9 HOURS
    11.1  General properties of sulphur dyes.
    11.2  Dissolving of sulphur dye.
    11.3  Dyeing with sulphur dye.
    11.4  After treatment with metallic salts.

12. VAT DYES                                         12 HOURS
    12.1  Structure and affinity of vat dyes.
    12.2  Vatting.
    12.3  Absorption of dye molecules by the fibre.
    12.4  Soaping of vat dye.
    12.5  Oxidation.
    12.6  Striping of vat dyes.
    12.7  Application of indigo on cotton.

13. DIPERSE DYE                                      12 HOURS
    13.1  Introduction to diperse dye.
    13.2  Application of diperse dye.
    13.3  Dyeing properties of diperse dye.
    13.4  Dyeing of polyester fibre.
    13.5  High temperature dyeing.

14. APPLICATION OF DYES                              8 HOURS
    14.1  Parameter of dyeing.
    14.2  Factors influencing levelness of dyeing.
    14.3  Factors influencing rate of absorption.
    14.4  Cause of the unlevel dyeing.

15. TEXTILE PRODUCT QUALITY ACCORDING TO          8 HOURS
    ECO STANDARD.
    15.1    Back ground of ECO Standard.
    15.2    Effect on the Textile Industry.
    15.3    Implementation of ECO Standard.


**Books Recommended:**

1.      Dyeing and Chemical Technology of Textile Fibres, (E.R. Trotman).
2.      Laboratory of Course in Dyeing, (David g. Duff and Roy. S. Singlor)
3.      H.B.K. of Synthetic Dyes and Pigments, (M. M. Shah).
4.      Technology of Bleaching and Dyeing of Textiles Fibres, (Creackravirty).
5.      Dyeing of Wool, Silk and Man Made Fibres, (R. S. Prayag).
6.      Introduction to Chemistry of Dyestuff, (Senai).
7.      Chemical Processing of Fibre and Fabric Functional Finishes Part-B. (M. Lewin and S. B. Sello).
8.      Color Chemistry (Henrich Zollinger 1987).
9.      Dyeing of Synthetic — Polymers and Acetate Fibres (D. N. Nunn).

# TD-235    COLORATION - I

**Instructional Objectives:**

1. UNDERSTAND THE NATURE AND IMPORTANCE OF PRE TREATMENT PROCESS
    1.1    Explain the objectives of pre-treatment.
    1.2    Enlist the sequence of pre-treatment process.

2.    UNDERSTAND SINGING
    2.1    Explain the methods of singing.
    2.2    Describe the working of singing machines.

3.    UNDERSTAND THE CHEMISTRY OF DE-SIZING
    3.1    Explain de-sizing process.
    3.2    Describe oxidizing method of de-sizing.
    3.3    Explain enzymatic de-sizing process.
    3.4    Explain hot washing with detergent process.

4.    UNDERSTAND THE SCOURING TECHNIQUE
    4.1    Explain scouring and icier boiling.
    4.2    Explain soaps and detergent application in scouring.

5.    UNDERSTAND THE NATURE AND CHEMISTRY OF MERCERIZING
    5.1    Explain the mercerization process.
    5.2    Explain the effect of dead cotton on mercerization.

6.    UNDERSTAND THE BLEACHING PROCESS AND BLEACHING CHEMICALS
    6.1    Explain the sodium hypochlorite bleaching method.
    6.2    Explain method and merits of hydrogen peroxide bleach.
    6.3    State the uses of stabilizer in bleaching.

7.    UNDERSTAND THE SCOPE AND SIGNIFICANCE OF FLUORESCENT BRIGHTNESS
    7.1    Enlist the fibres to which Fluorescent brightner be applied.
    7.2    Explain the method of application of Fluorescent brightners.

8.    UNDERSTAND THE CHEMICAL CONSTITUTION OF DYES THEORY OF DYEING AND CLASSIFICATION OF DYES
    8.1    Explain the classification of dyes on the basis of their dyeing properties.
    8.2    Describe the theory of dyeing.
    8.3    Explain the theory of dyeing.
    8.4    Explain the role of water in dyeing process.
    8.5    Explain the role of Electrolyte in Dyeing process.
    8.6    Express the effect of heating in Dyeing process.

9. UNDERSTAND THE APPLICATION AND CHEMISTRY OF DIRECT DYE
   9.1 Explain properties and method of application of Direct Dye.
   9.2 Enlist the parameters effecting Direct Dye absorption and use of leveling agent.
   9.3 Describe the three groups of direct dye and their method of application.

10. UNDERSTAND THE PROCESS OF DYEING WITH REACTIVE DYES
    10.1 Describe reactive dyes.
    10.2 Explain pad-batch and continuous dying of cotton fabric with reactive dyes.

11. UNDERSTAND THE PROCESSING OF FABRIC WITH SULPHUR DYES
    11.1 Explain chemistry and properties of sulphur dye.
    11.2 Describe the method of dissolving sulphur dye.
    11.3 Explain the application of sulphur dye on cotton fabric.
    11.4 State the method for after treatment of dyed fabric with peroxide and metallic salts.

12. UNDERSTAND THE CHEMISTRY AND APPLICATIONS OF VAT DYES
    12.1 Explain properties and synthesis of indigo.
    12.2 Describe vatting.
    12.3 Explain the absorption process of dye molecule by the fibre.
    12.4 Explain the oxidation process of vat dyed fabric.
    12.5 Describe the soaping of vat dyed fabric.
    12.6 Explain the stripping of vat dyes.
    12.7 Explain the application of indigo to cotton.

13. UNDERSTAND THE NATURE AND PROCESSING OF DISPERSE DYES
    13.1 Explain disperse dyes.
    13.2 State the method of application of disperse dye on fabric.
    13.3 Explain the dyeing properties of disperse dye.
    13.4 Explain dyeing process of polyester fabrics with disperse dyes.
    13.5 Explain high temperature dyeing process.

14. UNDERSTAND APPLICATION OF DYES
    14.1 Enlist parameters of dyeing.
    14.2 State factors influencing levelness of dyeing.
    14.3 Explain factors influencing rate of dyeing and absorption of dyes.
    14.4 State the causes of unleveled dyeing.

15. UNDERSTAND PRODUCT QUALITY ACCORDING TO ECO STANDARD
    15.1 Describe background of ECO standard.
    15.2 State the consequences for the textile industry.
    15.3 Explain method of implementation of ECO standard.

# TD-235 COLORATION - I

**Contact Hours:**
**Practical     : 192**

**List of Practicals:-**

1. Enzymatic de-sizing of a sized fabric.
2. Effect of pH on enzymatic de-sizing.
3. Effect of salt on enzymatic de-sizing.
4. Oxidative de-sizing of a sized fabric.
5. Enzymatic de-sizing by pad batch method.
6. Scouring of de-sized fabric.
7. Bleaching (Half) with Hydrogen peroxide.
8. Bleaching (full) with Hydrogen peroxide.
9. Bleaching with Hypochiorite.
10. Application of direct dye on cellulosic fabric.
11. Effect of Liquor Ration on application of direct dye.
12. Effect of salt on application of direct dye.
13. Application of direct dye (self shade).
14. Application of direct dye (compound shade).
15. Application of cold reactive dye on cotton.
16. Application of Reactive Dye (self shade).
17. Application of Reactive dye (compound shade).
18. Application of Reactive Dye with Pad bath method.
19. Application of Reactive Dye with pad dry method.
20. Application of sulphur dye on cotton.
21. Effect of sodium sulphide in sulphur dye.
22. One bath dyeing of sulphur dye (Knitted Fabric).

## MTT-212   Introduction to Textile and Clothing

COURSE CODE

| TOTAL CONTACT HOURS: | 64 | T | P | C |
|---|---|---|---|---|
| Theory: | 64 | 2 | 0 | 2 |
| Practical: | 0 | | | |

**AIM:** Overview of the textile and clothing industry; Textile and clothing product marketing; Occupation in the textile and clothing industry; Textile and clothing machinery and equipment.

**Course Content**

**1. Overview of the textile and clothing industry                20 Hours**

1.1 The current production situation and future development of the textile and clothing industry

1.2 The basic characteristics, new models, and new business forms of the textile and clothing industry

1.3 The general situation of information gathering, trading platforms, trade channels, warehousing and transportation in the textile and clothing industry

1.4 The regulatory system and main regulations and policies of the textile and clothing industry.

1.5 The structure of the textile and clothing industry chain

1.6 The development of industrial clusters

**2. Textile and clothing product marketing                16 Hours**

2.1 The meaning of textile and clothing product marketing

2.2 The production and marketing methods of textile and clothing enterprises

2.3 Establishing scientific marketing concepts

2.4 Mastering online marketing and green marketing methods

**3. Occupation in the textile and clothing industry                12 Hours**

3.1 The professional positions in the textile and clothing industry

3.2 National vocational skill standards in the textile and clothing industry

3.3 Making career planning

**4. Textile and clothing machinery and equipment                16 Hours**

4.1 The current situation and development prospects of intelligent application of textile and clothing machinery and equipment

4.2 Mastering the performance and operation methods of commonly used textile and clothing machinery and equipment

**Instructional Objectives:-**

**MT-212- Introduction to Textile and Clothing**

**Overview of the textile and clothing industry**

1.1 Explain the current production situation and future development of the textile and clothing industry

1.2 Understand t he basic characteristics, new models, and new business forms of the textile and clothing industry

1.3 Interpret he general situation of information gathering, trading platforms, trade channels, warehousing and transportation in the textile and clothing industry

1.4 Explain he regulatory system and main regulations and policies of the textile and clothing industry in China

1.5 Understand the structure of the textile and clothing industry chain

1.6 Interpret the development of industrial clusters

1.7 Explain the basic characteristics and radiation effects of the construction of textile and clothing industry clusters in Jiangsu Province

**2. Textile and clothing product marketing**

2.1 Explain the meaning of textile and clothing product marketing

2.2  Understand the production and marketing methods of textile and clothing enterprises

2.3 Interpret Establishing scientific marketing concepts

2.4 Explain the mastering online marketing and green marketing methods

**3. Occupation in the textile and clothing industry**

3.1 Explain the professional positions in the textile and clothing industry

3.2 Understand the National vocational skill standards in the textile and clothing industry

3.3 Interpret making career planning

**4. Textile and clothing machinery and equipment**

4.1 Explain the current situation and development prospects of intelligent application of textile and clothing machinery and equipment

4.2 Understand the performance and operation methods of commonly used textile and clothing machinery and equipment

# 3rd Year

نصاب (اصل سوم)

کوڈ نمبر :315

| کل | کلیہ | تھی |
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حصہ اول اسلامیات

حصہ دوم مطالعہ پاکستان

کل وقت : 300 منٹ

موضوعات مذہبہ

1- قرآن مجید

سورۃ الفاتحہ۔ آیتہ الکرسی۔ سورۃ البقرۃ کی آخری آیات ازامن الرسول سے آخر تک و سورۃ طلاق مع ترجمہ و تشریح

2- بارہ منتخب احادیث مع ترجمہ و تشریح

☆ بنی الاسلام علی خمس شہادت ان لا الہ الا اللہ و اقم الصلوۃ و ایتاء الزکوۃ و حج البیت و صوم رمضان

☆ الدین النصیحتہ

☆ المنشاء مومن

☆ للمومن علی المومن ست خصال بعود ان مرض و تشہدہ اذا مات و یجیبہ اذا دعا

☆ لیسم علیہ ان لا نقیہ ولیشتہ انا عضس و فصیحتہ اذا غاب او شہد

☆ لا تحن من خدیک

☆ لا یدخل الجنتہ قاطع

☆ ان اللہ حرم علیکم عقوق الامہات و ضاعتہ اعمال

☆ لیسر و لا تعسر و لا تنفرا

☆ ذاق طعم الایمان من مرضی باللہ و بالاسلام دینا بمحمد نبیا

☆ افضل الذکر لا الہ الا اللہ

3- حقوق و فرائض

حصول تعلیم بطور فرض۔ والدین اور اولاد کے حقوق و فرائض۔ ہمسایہ کے حقوق

4- اسلام کی اخلاقی اقدار

صبر استقلال۔ قناعت و گذر۔ ایفائے عہد۔ مروت ، ایثار و قربانی

سال سوئم

حصہ اول اسلامیات

## تدریس مقاصد

قرآن حکیم

عمومی مقصد: منتخب سورتوں اور آیات کی روشنی میں اسلام کے بنیادی مقاصد اور عبادات جان سکے

خصوصی مقاصد: طالب علم اس قابل ہو جائے گا کہ

سورۃ الفاتحہ : آیتہ الکرسی۔ سورۃ بقرۃ کی آخری آیات از امن الرسول سے اور سورۃ اخلاق کا ترجمہ و تشریح کر سکے

طالب علم درج ذیل کا مفہوم بیان کر سکے

☆ رب العالمین صرف اللہ تعالیٰ ہے

☆ اللہ رحم کرنے والا ہے

☆ قیامت کے دن بادشاہی اللہ کی ہو گی

☆ عبادت اور استعانت کا حقدار صرف اللہ ہے

طالب علم درج ذیل کا مفہوم بیان کر سکے

☆ اللہ پاک ہر عیب سے پاک ہے

☆ اللہ کے اسمائے حسنہ حق اور قیوم ہیں

☆ تعلیم انبیاء پر ایمان لانا ضروری ہے

☆ رسولؑ ملا کہ کتب سماویہ پر ایمان لانا فرض ہے

☆ اطاعت حقیقی صرف اللہ کے لیے ہے

☆ اسلامی احکامات پر عمل کرنا انسانی بھلائی میں ہے

☆ کفر کو اللہ کی مدد کے بغیر شکست نہیں دی جا سکتی

☆ اللہ ایک ہے

☆ اللہ کسی کا محتاج نہیں نہ اس کا کوئی شریک ہے

منتخب احادیث

عمومی مقصد: احادیث کی روشنی میں اسلامی تعلیمات پر عمل پیرا ہو سکے

خصوصی مقصد:

☆ احادیث کا ترجمہ بیان کر سکے

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☆ احادیث کی تشریح کر سکے

☆ معاشرتی اور انفرادی زندگی میں احادیث سے رہنمائی حاصل کر سکے

# حقوق و فرائض

عمومی مقصد : اسلامی معاشرے کا ایک اچھا فرد بن سکے

خصوصی مقاصد :

☆ والدین کے حقوق و فرائض بیان کر سکے

☆ ہمسایوں کے حقوق بیان کر سکے

☆ اسلام میں حقوق و فرائض کی ادائیگی کی صورت میں اپنے اندر خدمت خلق کا جذبہ پیدا کر سکے

## اسلامی اقدار

عمومی مقصد : طالب علم بیان کر سکے گا کہ تعلیم کا مقصد حسن اخلاق سے متصف ہونا ہے

خصوصی مقاصد

☆ اخلاق کے معنی و مفہوم کو بیان کر سکے

☆ اسلام میں حسن اخلاق کی اہمیت بیان کر سکے

☆ قرآن و سنت کی روشنی میں صبر و استقلال کی اہمیت بیان کر سکے

☆ اسلام میں عفو و درگزر کی اہمیت بیان کر سکے

☆ ایفائے عہد کی اہمیت بیان کر سکے

☆ اخوت کے معنی و مفہوم کو بیان کر سکے

☆ اخوت اسلامی کی اہمیت بیان کر سکے

☆ اسلام کی اعلیٰ اقدار کو اپنا کر مثالی معاشرہ پیدا کر سکے

نصاب (سال سوئم)

GEN 311

نی پی سی
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مطالعہ پاکستان
حصہ دوئم

کل وقت : 20 گھنٹے

# موضوعات

☆ قیام پاکستان

☆ باونڈری کمیشن

☆ ریڈ کلف ایوارڈ

☆ تقسیم بنگال و کلکتہ

☆ تقسیم پنجاب

☆ مسئلہ مہاجرین

☆ ریاست کا الحاق

☆ ریاست جموں و کشمیر

☆ نہری پانی کا تنازعہ

☆ قرار داد مقاصد

☆ علماء کے بائیس نکات

☆ 1962-1956 اور 1973 کے دساتیر کی اسلامی دفعات

☆ پاکستان کا محل وقوع اور اس کی جغرافیائی اہمیت

☆ قدرتی وسائل (تیل، گیس، کوئلہ)

مطالعہ پاکستان (حصہ دوئم)

قیام پاکستان

## تدریس مقاصد

عمومی مقاصد : قیام پاکستان کے بعد درپیش مسائل سے آگاہی حاصل کرے اور بیان کرے

☆ خصوصی مقصد :

☆ باؤنڈری کمیشن تشکیل اور اس کے فرائض بیان کر سکے

☆ ریڈ کلف اور اس کے ایوارڈ کے بارے میں بیان کر سکے

☆ بنگال اور کلکتہ کی تقسیم کی وجوہات بیان کر سکے

☆ پنجاب کی تقسیم کی تفصیل بیان کر سکے

☆ مہاجرین کی آمد سے جو مسائل پیدا ہوئے انہیں بیان کر سکے

☆ ریاستوں کے الحاق کے بارہ میں تفصیل بیان کر سکے

☆ ریاست جموں کشمیر کے بارے میں بیان کر سکے

☆ نہری پانی کے تنازعہ کو بیان کر سکے

☆ قرار داد مقاصد کی تفصیلات بیان کر سکے

☆ 22 علماء کے متفقہ اسلامی نکات بیان کر سکے

☆ قیام پاکستان کے بعد نفاذ اسلام کی کوششوں کو بیان کر سکے

☆ پاکستان کے محل وقوع اور اس کی جغرافیائی اہمیت بیان کر سکے

☆ پاکستان میں قدرتی وسائل (تیل۔ گیس۔ کوئلہ) کے بارہ میں بیان کر سکے

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Gen 311

کل وقت: 20

نصاب اخلاقیات

سال سوئم

موضوعات

☆ احساس ذمہ داری

☆ مثبت ذہن

☆ عدل و انصاف

☆ قومی خدمت کا جذبہ

☆ ذکر و نظر کی پاکیزگی

☆ احترام آدمیت

☆ شائستگی

☆ عفو و درگزر

☆ بردباری

☆ خود انحصاری

☆ اثر و نفوذ

☆ جامعیت

☆ اپنی ذات کی معرفت (بذریعہ ہم عمر طلباء۔ اساتذہ۔ اہم شخصیات ادارہ)

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| MODERN TEXTILE TECHNOLOGY YEAR 3 | | | | | |
|---|---|---|---|---|---|
| **COURSE CODE** | **MTT-312** Testing of textile materials | | | | |

| **TOTAL CONTACT HOURS:** | **128** | | **T** | **P** | **C** |
|---|---|---|---|---|---|
| Theory: | 32 | | **1** | **3** | **2** |
| Practical: | 96 | | | | |

**AIM:** The training objective of this course is to be able to engage in the inspection and quality assessment of textiles such as fibers, yarns, and fabrics in the post of raw material and product testing after completing this course, and to acquire the basic knowledge of textile materials necessary for engaging in textile process design and implementation, textile design, production technology and management, and textile trade.

**Course Content**

**1. Initial knowledge of textile materials            3 Hours**
1.1 Textile materials and their classification
1.2 The formation process of textiles
1.3 The basic knowledge of textile testing

**2. Identification of textile fibers            3 Hours**
1.1 Master the basic principles, procedures, and methods of textile fiber identification
1.2 Master the visual characteristics of hand feel, combustion, morphology, chemical dissolution, and colouring of common textile fibers
1.3 Systematic approach to identifying textile fibers

**3. Performance testing and quality evaluation of textile fibers      16 Hours**
3.1 Understand the basic knowledge of moisture absorption and moisture absorption balance of textile materials
3.2 Master the definitions of moisture regain, actual moisture regain, standard moisture regain, and public moisture regain
3.3 Master the concepts of drying quality, actual quality, and declared quality, as well as the relationship between them
3.4 Master the principle of moisture regain measurement
3.5 Master the definition and application of textile fiber indicators (linear density, fiber size, metric count, English count)
3.6 Master the principle of measuring fiber fineness by mid stage weighing method
3.7 Master cotton fiber varieties and characteristics
3.8 Understand cotton fiber quality evaluation standards
3.9 Master the varieties and characteristics of wool fibers
3.10 Know the varieties and characteristics of other special wool fibers
3.11 Understand the characteristics of ramie and flax fibers, and know other hemp fibers
3.12 Understand the characteristics of mulberry silk fibers and other silk fibers
3.13 Know other new natural fibers
3.14 Master the varieties and characteristics of common chemical fibers
3.15 Understand the quality evaluation standards for chemical fibers
3.16 Differentiated fiber

**4. Yarn performance testing and quality evaluation**            **4Hours**
4.1 Master the knowledge of yarn twisting and twist testing
4.2 Master yarn evenness knowledge
4.3 Master knowledge of yarn tensile properties
4.4 Know other properties of yarn
4.5 Know yarn defects and hairiness
4.6 Knowledge of yarn quality assessment

**5. Fabric performance testing and quality evaluation**            **6Hours**
5.1 Master the knowledge of fabric classification
5.2 Master the content and expression of structural parameters of woven fabrics
5.3 Understand the content and representation of structural parameters of knitted fabrics
5.4 Know the content and representation of structural parameters of nonwoven fabrics
5.5 Master the mechanical performance indicators and uses of fabrics
5.6 Understand other properties of fabrics
5.7 Master fabric quality evaluation methods


**Recommended Book**
"Textile Fibers and Products" Geng Qinyu editor in chief
"Textile Materials" Jiang Huai editor in chief

**List of Practical**                                                    **96 hours**
1. Understand common textile materials
2. Correct classification of textile fibers
3. Identify textile fiber varieties by hand and eye measurement
4. Identify textile fiber varieties using combustion method
5. Identify textile fiber varieties using the microscope method
6. Identify textile fiber varieties using chemical dissolution methods
7. Identify textile fiber varieties using coloring methods
8. Conduct testing and analysis, and write work reports
9. Proficient in calculating moisture regain
10. Proficient in performing public quality calculations
11. Measure textile materials in accordance with standards and specifications
12. Proficient in calculating fiber and yarn fineness
13. Proficient in converting various fineness indicators
14. Measure the fineness of textile fibers in accordance with standards and specifications
15. Conduct testing and analysis, and write work reports
16. Conduct raw cotton hand pull length inspection
17. Measure the micronaire value of raw cotton according to standards
18. Measure the specific strength of raw cotton according to standards
19. Conduct raw cotton hand pull length inspection
20. Evaluate the quality of fibers according to standards
21. Identify common yarn varieties
22. Analyze yarn structure
23. Measure the twist of yarn according to standards
24. Measure the 100-meter mass variation coefficient of yarn according to standards
25. Measure the strength variation coefficient of yarns according to standards
26. Measure yarn evenness and nep impurities according to standards
27. Evaluate the quality of fibers according to standards
28. Identify common woven, knitted, and nonwoven fabrics
29. Measure the density of woven fabrics according to standards
30. Able to evaluate the quality of woven fabrics (knitted fabrics) according to standards
31. Measure the tensile breaking strength and elongation at break of woven fabrics according to standards
32. Measure the tear strength of fabrics according to standards
33. Measure the wear resistance of fabrics according to standards
34. Measure the pilling and pilling properties of fabrics according to standards

**MTT-312    TESTING OF TEXTILE MATERIALS**
**INSTRUCTIONAL OBJECTIVES:**

**1. Knowledge objectives**

1.1  Understand the basic concepts and categories of textile materials and textiles;

1.2  Master the basic knowledge of textile material testing

1.3 Focus on mastering the basic knowledge of textile fibers (fiber classification, main characteristics and quality evaluation knowledge of common fibers, and textile fiber identification knowledge);

1.4  Focus on mastering the basic knowledge of yarn (yarn classification, main characteristics, and quality evaluation knowledge);

1.5  Basic knowledge of key fabrics (fabric classification, main characteristics, and quality evaluation knowledge).

**2.  Quality objectives**

2.1 Have a sharp and clear work idea and a scientific and rigorous work style;

2.2 Positive work attitude and sense of responsibility;

2.3 Have strong lifelong learning ability;

2.4 Have a hard working spirit and the ability to work together;

2.5 Have a pioneering and innovative spirit.

**3. Skill Objectives**

3.1 Ability to recognize common textile materials

3.2 Ability to identify textile fiber varieties using systematic methods;

3.3 Ability to test the performance of textile materials using instruments in accordance with standards;

3.4 Ability to issue test reports and analyze results;

3.5 Check and supervise the implementation process and solve problems in the implementation work

| COURSE CODE | MTT-322 Textile Art and Art Design | | | |
|---|---|---|---|---|
| **TOTAL CONTACT HOURS:** | **128** | **T** | **P** | **C** |
| Theory: | 32 | **1** | **3** | **2** |
| Practical: | 96 | | | |

**AIM:**

    1. Black and white sketch, line drawing pattern design, drawing ability

    2. Ability to design and draw color patterns

    3. Ability to design and draw flowers, landscapes, and figures

    4. Comprehensive case design and drawing ability

## Course Content

**1. Black and white sketch, line drawing pattern design and rendering ability    8 Hours**

1.1 The law of formal beauty

1.2 Basic Elements of Pattern Composition

1.3 Design black and white sketch and line drawing patterns

1.4 Draw black and white sketches, line drawing patterns

**2. Ability to design and draw colour patterns    12Hours**

2.1 Understand the basic knowledge of patterns

2.2 Apply the rules of formal beauty

2.3 Recognize and master colour knowledge

2.4 Design flowers and colourful patterns

**3. Application Practice of Art Design    12 Hours**

1.1 Understand the basic knowledge of patterns

1.2 Apply the rules of formal beauty

1.3 Recognize and master color knowledge

1.4 Design batik works

1.5 Complete T-shirt graphic printing

**List of Practical    96 hours**

1. Basic Sketch of Line Drawing

2. Comprehensive description of points, lines, and surfaces

3. Design and description of flower and leaf pattern deformation

4. Color cognition and color contrast

5. Comparison of color brightness and purity

6. Individual pattern design and depiction

7. Bipartite continuous design and depiction

8. Quadrilateral continuous design and depiction

9. Design and Description of Colorful Flower Patterns

10. Draw tie dye patterns

11. Tie dyeing production

**Recommended Book**

"Modern Pattern Design", edited by Zheng Jun

## MTT-322  TEXTILE ART AND ART DESIGN

### INSTRUCTIONAL OBJECTIVES:
**1. Professional competence**

(1) Black and white sketch, line drawing pattern design, drawing ability

(2) Ability to design and draw color patterns

(3) Ability to design and draw flowers, landscapes, and figures

(4) Comprehensive case design and drawing ability

**2. Method capability**

(1) Ability to collect and organize data

(2) Ability to formulate and implement work plans

(3) Ability to apply theoretical knowledge

(4) Ability to inspect and judge

(5) Ability to use equipment and instruments

(6) Computer application ability

(7) Ability to paint and recognize colors

(8) Ability to analyze, summarize, and investigate

**3. Social Capacity**

(1) Cultivate students' communication skills and team spirit

(2) Develop students' ability to analyze and solve problems

(3) Cultivate students' work style of innovation and dedication

(4) Cultivate students' expression ability

(5) Cultivate students' sense of social responsibility

| COURSE CODE | MTT-333 Spinning Process Flow and Practice |
| --- | --- |

| TOTAL CONTACT HOURS: | 160 | | **T** | **P** | **C** |
| --- | --- | --- | --- | --- | --- |
| Theory: | 64 | | **2** | **3** | **3** |
| Practical: | 96 | | | | |

**AIM:**
**1. Ability to select and match raw materials**
1.1 Ability to analyze spinning performance based on raw material inspection data
1.2 Able to select and match raw materials according to yarn requirements and raw material conditions
1.3 Able to prepare raw material selection table
**2. Ability to design and implement spinning products**
2.1 Be able to determine the spinning process based on specific yarn products
2.2 Be able to use spinning process knowledge to analyze the process and configure various machine process parameters
2.3 Main process calculations for typical spinning equipment
2.4 Able to carry out process commissioning on the machine and start up trial spinning
**3. Quality control capability**
3.1 Familiar with the quality control content and requirements of semi-finished products in various production processes
3.2 Will test the quality of semi-finished products and submit a quality inspection report
3.3 Analyze quality issues and propose improvement measures

**Course Content**
**1. Course introduction - Understanding yarn products** ☐ **2 hours**
1.1 Mastering the classification of yarn products and their labeling meanings
1.2 Analyze the raw materials, uses, linear density, and structure of yarn

**2. Technological Design of Pure Cotton Combed Ring Spinning Yarn**
**2.1 Raw cotton selection** **2 hours**
2.1.1 Understand the performance of raw cotton
2.1.2 Master the basis, principles, and methods of raw cotton selection
**2.2 Process Design of Opening and Cleaning Cotton** **4 hours**
2.2.1 Master the cotton opening and cleaning tasks and equipment composition
2.2.2 Master the main mechanisms, technological processes, and working principles of cotton picking machines, cotton mixing machines, cotton opening machines, and cotton cleaning machines
2.2.3 Familiar with the principles of cotton opening and cleaning process
2.2.4 Master the analysis of loosening and impurity removal functions and process configuration;
2.2.5 Master the drive system and process calculation of the cleaning and winding machine
**2.3 Carding Process Design** **8 hours**
2.3.1 Master the technological process, mechanism composition, and needle tooth function characteristics of the carding machine.
2.3.2 Master the process, main influencing factors, and process adjustment of the feeding and take-up parts (carding and impurity removal) of the carding machine.

2.3.3 Master the process, main influencing factors, and process adjustment of the cylinder, cover plate, and doffer parts (carding, impurity removal, uniform mixing, and coagulation).

2.3.4 Master the speed of the carding machine, drafting multiple, drafting gear, and output calculation.

2.3.5 Understand the type, performance, main specifications and parameters of card clothing, selection principles, and characteristics of new card clothing.

2.3.6 Understand the quality indicators and quality control methods of raw sliver. Development Trend of New Type Carding Machines.

**2.4 Drawing process design** **8 hours**

2.4.1 Drawing process tasks, process flow, and organizational composition.

2.4.2 Master the principle of merging; Basic principle of roller drafting; Basic calculations related to drafting

2.4.3 Understand the drafting type and characteristics; Master the process configuration principles and main process configuration parameters of the drawing frame

2.4.4 Master the speed, drafting multiple, and output calculation of the drawing frame

2.4.5 Understand the classification of yarn unevenness, its causes, and factors affecting yarn evenness

**2.5 Roving process design** **8 hours**

2.5.1 Master the roving process tasks and process flow; Main institutional composition

2.5.2 Master the drafting type and characteristics of roving frames

2.5.3 Master the realization of twisting and winding on roving machines, the application of false twisting on roving, and the four conditions for roving winding

2.5.4 Master the configuration of roving drafting process and twisting and winding process

2.5.5 Familiar with the selection basis of roving twist factor and spindle speed.

2.5.6 Understand the roving transmission system; Focus on mastering drafting, twist, and production process calculations.

**2.6 Spinning process design** **8 hours**

2.6.1 Master the tasks and process flow of the spinning machine

2.6.2 Be familiar with the composition, function, and working characteristics of the drafting, twisting, winding, and forming mechanisms of the spinning frame

2.6.3 Master the configuration content and principles of drafting, twisting, and winding process parameters for spinning frames

2.6.4 Master the speed of the spinning machine; Draft; Twist; Production calculation

2.6.5 Familiar with spinning quality control indicators and quality control methods

**2.7 Post processing process design** **4 hours**

2.7.1 Master the process flow of post processing single yarn and ply yarn

2.7.2 The winding machine mechanism and main process configuration and calculation

2.7.3 The structure and main process configuration and calculation of the twisting machine and double twisting machine

**3. Process design of pure cotton combed yarn**

**3.1 Combing preparation process** **4 hours**

3.1.1 Master the tasks of the combing process; Quality characteristics and production process of combed yarn.

3.1.2 Master the even number criteria, and be familiar with the three preparation process routes and characteristics of combing

3.1.3 The combing preparation machinery and the configuration of process parameters

**3.2 Comber process design** **2 hours**

3.2.1 The four working stages of the comber; Composition and function requirements of the main mechanism of the combing machine

3.2.2 Understand the concepts, process determination basis, and adjustment methods of the main processes of the comber (cotton feeding mode, feeding length, carding gauge, noil gauge, clamp plate closing timing, and cylinder positioning)

**4. Process design of blended yarn**

**4.1 Performance characteristics and selection of chemical fiber raw materials    2 hours**

4.1.1 Master the performance characteristics and selection principles of chemical fiber raw materials (polyester, acrylic, viscose, etc.)

**4.2 Mixing process design and process flow selection                                2 hours**

4.2.1 Master the characteristics of three mixing methods (package mixing, strip mixing, and small weighing).

4.2.2 Master the spinning process flow for different blended yarn products

**4.3 Mixing ratio and feeding calculation for different types of fiber mixtures     2hours**

4.3.1 Master the mixing ratio and feeding calculation for different types of fiber mixtures

**4.4 Key points for configuration of spinning chemical fiber process parameters   2 hours**

4.4.1 Familiar with the characteristics of spinning chemical fiber process configuration

4.4.2 Design the spinning process based on different blended yarn products

**5.New spinning and new yarn process design**

**5.1 Rotor spinning machine process                                                2 hours**

5.1.1 Master the working principle of the rotor spinning machine

5.1.2 Understand the main parameters of rotor spinning machine process design

5.1.3 Understand the structural characteristics of rotor spun yarn

**5.2 Air jet spinning machine process                                              2 hours**

5.2.1 Understand the working principle of air jet spinning machines

5.2.2 Understand the key points of process design for air jet spinning machines

5.2.3 Understand the structural characteristics of air jet spun yarn

**5.3 New ring spinning technology - compact spinning, siro spinning, slub yarn, core spun yarn 2hours**

5.3.1 Master the spinning principles of compact spinning, siro spinning, slub yarn, and core spun yarn

5.3.2 Understand the characteristics and product adaptability of compact spinning yarn

5.3.3 Master the analysis of basic parameters of slub yarn and test spinning on the machine


**Recommended Book**

(1) Selection of teaching materials

Textbook: Modern Cotton Spinning Technology, edited by Zhang Shuguang, Donghua University Press

(2) Teaching reference books:

"Spinning Process Design and Implementation", edited by Zhang Ye, Donghua University Press

(3) "Cotton Textile Handbook", China Textile Press

**List of Practical**                                                    **96 hours**

1. Understand the production process of typical yarn products, the tasks of each process, and the names of output semi-finished products
2. Write the production process of carded yarn and combed yarn, as well as the names of output semi-finished products in each process

3. Conduct raw material selection based on the requirements of specific yarn products and raw material conditions
4. Prepare a raw material selection table
5. Select the opening and cleaning process based on specific yarn products
6. Analyze the effects of opening, cleaning, and loosening, impurity removal, as well as the main process influencing factors
7. Select the opening and cleaning process parameters based on the performance of raw materials
8. Process calculation of the coil forming machine
9. Can draw the process flow diagram of the carding machine
10. Analyze the main factors affecting the carding and impurity removal processes of the carding machine
11. Able to configure the main process parameters of the carding machine and develop a carding machine process sheet
12. Capable of calculating the speed, draft ratio, draft gear, and output of the carding machine.
13. Will conduct carding machine start-up trial spinning
14. Analyze the quality issues of carding machine slivers and propose process improvement measures
15. Draw a drawing pattern diagram of a drawing frame
16. Configure drawing frame process parameters
17. Main process calculation of drafting on a drawing frame
18. Analyze the causes of regular unevenness of the sliver and conduct quality control of the cooked sliver
19. Able to draw drafting pattern diagram of roving frame
20. Capable of configuring drafting, twisting, and winding process parameters for roving frames
21. Able to calculate the speed, draft, twist, and yield of the roving frame
22. Draw the drawing pattern diagram of the spinning frame
23. Capable of configuring drafting, twisting, and winding process parameters for spinning frames
24. Calculate spinning machine speed, draft, twist, and production process
25. Formulate spinning machine process sheet
26. Analyze yarn quality indicators and propose quality improvement measures
27. Select the post processing process according to the category of yarn products
28. Calculation of Main Process Parameters of Winding Machine and Twisting Machine
29. Select the combing process according to the yarn product
30. Configure combing preparation mechanical process parameters
31. Main process calculation of the winding machine
32. Analyze the main process influencing factors such as cotton feeding, carding, and noiling on the combing machine
33. Calculate the output of the comber
34. Be able to reasonably select and match chemical fiber raw materials based on product characteristics and chemical fiber raw material characteristics
35. Select the process flow for cotton and chemical fiber, chemical fiber and chemical fiber blended yarn
36. Perform the mixing ratio and feeding calculation for different types of fiber mixtures
37. Design the spinning process based on different blended yarn products
38. Configure the main process parameters of the rotor spinning machine

39. Analyze the structural characteristics and product adaptability of rotor spun yarns
40. Aanalyze the structural characteristics and product adaptability of air jet spun yarn
41. Master the design of core spun yarn process parameters and calculation of spandex fiber content
42. Be able to analyze the yarn structure of compact spinning, siro spinning, slub yarn, and core spun yarn
43. Capable of designing new types of yarns and trial spinning on machines

# MTT-333  SPINNING PROCESS FLOW AND PRACTICE

**INSTRUCTIONAL OBJECTIVES:**
**1.Method ability**
(1) Data collection and sorting ability
(2) Ability to formulate and implement work plans
(3) Ability to understand process documents
(4) Ability to inspect and judge
**2. Social ability**
(1) Communication ability and teamwork spirit
(2) Ability to analyze and solve problems
(3) Rigorous and serious work attitude and sense of social responsibility
(4) Quality awareness, safety awareness, environmental awareness
(5) Self learning and self training abilities
**3. Professional competence**
**3.1 Ability to select and match raw materials**
(1) Ability to analyze spinning performance based on raw material inspection data
(2) Able to select and match raw materials according to yarn requirements and raw material conditions
(3) Able to prepare raw material selection table
**3.2 Ability to design and implement spinning products**
(1) Be able to determine the spinning process based on specific yarn products
(2) Be able to use spinning process knowledge to analyze the process and configure various machine process parameters
(3) Main process calculations for typical spinning equipment
(4) Able to carry out process commissioning on the machine and start up trial spinning
**3.3 Quality control capability**
(1) Familiar with the quality control content and requirements of semi-finished products in various production processes
(2) Will test the quality of semi-finished products and submit a quality inspection report
(3) Analyze quality issues and propose improvement measures

| COURSE CODE | MTT-343   Fabric Analysis and Sample Weaving |
|---|---|

| **TOTAL CONTACT HOURS:** | **160** | | **T** | **P** | **C** |
|---|---|---|---|---|---|
| Theory: | 64 | | **2** | **3** | **3** |
| Practical: | 96 | | | | |

**AIM:**   The learning context design of this course is based on a work process oriented approach, guided by typical work tasks, and integrated with theoretical knowledge, operational skills, and professional literacy. Through the learning of this series of learning situations, students can not only master the professional abilities of various types of fabric analysis and sample weaving, but also comprehensively cultivate their comprehensive qualities such as teamwork, communication and expression, sense of responsibility, professional norms, and professional ethics, enabling them to master various skills and relevant professional knowledge required for their jobs through the learning process.

**Course Content**

**1. Analysis and Sample Test Weaving of Three Primary Weave Fabrics**

**1.1 Analysis of three primary weave fabrics                                    8 hours**

1.1.1 Understand the classification of fabrics

1.1.2 Master the drawing of computer graphics

1.1.3 Know the typical varieties of three primary tissues

1.1.4 Familiar with the methods and procedures of fabric analysis

1.1.5 Analyse various indicators of three primary weave fabrics, with emphasis on warp and weft density analysis, weave analysis, colour yarn arrangement analysis, and drawing of machine drawing

**1.2 Trial weaving of three primary weave samples                          4 hours**

1.2.1 Understand the types of sample looms

1.2.2 Familiar with the process of sample trial weaving

1.2.3 Master the process design of fabric sample products

1.2.4 Able to perform sample weaving of three primary weave fabrics

1.2.5 Including warp and weft yarn preparation

1.2.6 Weaving operations such as heald drawing, reed insertion

1.2.7 Input pattern board, and weaving operations such as warp yarn finishing, weft throwing, beat-up, and weaving

**2. Analysis and Sample Test Weaving of Derivation Weave Fabrics**

**2.1 Analysis of plain derivative weaves fabrics                             4hours**

2.1.1 Master the distribution rules of weave points for warp, weft, variable, regular, and variable weave fabrics

2.1.2 Analyse the weave structure of plain derivative fabrics

2.1.3 Draw machine drawings

**2.2 Twill derivative weave fabric analysis                                    16hours**

2.2.1 Master the distribution rules of weave points of reinforced twill

2.2.2 Composite twill

2.2.3 Angle twill

2.2.4 Curve twill

2.2.5 Mountain twill

2.2.6 Broken twill, diamond twill, serrated twill, and reed mat twill
2.2.7 Analyse the structure of partially twill derivative fabrics
2.2.8 Draw machine drawings

**3. Combined Weave**                                                                  **16 hours**
3.1 To master the distribution rules of e points in stripe weave
3.2 To master the distribution rules of e points in crepe weave
3.3 To master the distribution rules of e points in through-hole weave
3.4 To master the distribution rules of e points in honeycomb weave,
3.5 To master the distribution rules of e points in mesh weave
3.6 To master the distribution rules of e points in embossed weave
3.7 To master the distribution rules of e points in plain jacquard weave
3.8 To master the distribution rules of e points in colour matching pattern
3.9 Analyse the structure of some combined weave fabrics and draw machine drawings.

**4. Compound weave**                                                                   **14 hours**
4.1 Warp backed weaves
4.2 Weft backed weaves
4.3 Extra warp and extra weft weaves
4.4 Stitching double weave and fabrics
4.5 Interchanging double cloths

**List of Practical**                                                                    **96 hours**
1. Analysis of plain weave fabrics
2. Trial weaving of plain weave sample
3. Analysis of twill weave fabrics
4. Trial weaving of twill weave samples
5. Analysis of satin weave fabrics
6. Trial weaving of satin weave samples
7. Analysis of square weave fabric
8. Analysis of mountain shaped twill fabric
9. Analysis of torn twill fabric
10. Trial weaving of diamond twill fabric samples
11. Trial weaving of reed mat twill fabric samples
12. Trial weaving of torn twill fabric samples
13. Analysis of longitudinal stripe weave fabric
14. Analysis of Honeycomb Fabric
15. Analysis of Perforated Fabric
16. Mesh weave fabric analysis
17. Analysis of Colour Matching Pattern Fabric
18. Trial weaving of plain ground jacquard fabric samples
19. Trial weaving of honeycomb tissue fabric samples
20. Colour matching pattern fabric sample trial weaving
21. Analysis of Warp Weaving Fabric
22. Trial weaving of patterned fabric samples
23. Trial weaving of double-layer fabric samples with inner and outer layers

**Recommended Book**
"Fabric Texture Analysis and Application" Hou Cuifang, Editor in Chief. Beijing: China Textile Press

## MTT-343  Fabric Analysis and Sample Weaving
**INSTRUCTIONAL OBJECTIVES:**

### 1. Knowledge objectives
(1) Describe the fabric style of each weave

(2) List typical varieties of various tissues

(3) Using the characteristics of fabric weave, and analyse the weave of various fabrics

4) Integrate the key points of weaving various types of weave fabrics

(5) Check for problems during sample weaving

(6) Determine the cause of defects in the sample.

(7) Self design organization chart, carry out sample process design and trial weaving.

### 2. Capability objectives

(1) Ability to collect and organize data.

(2) Simple drawing and artistic aesthetic ability.

(3) Ability to formulate and implement work plans.

(4) Ability to apply theoretical knowledge.

(5) Ability to inspect and judge.

(6) Ability to use equipment and instruments.

(7) Analyse and summarize research capabilities.

### 3. Quality objectives

(1) Cultivate students' communication skills and teamwork spirit.

(2) Cultivate students' ability to analyze and solve problems.

(3) Cultivate students' work style of innovation and dedication.

(4) Cultivate students' awareness of quality, safety, and environmental protection.

(5) Cultivate students' sense of social responsibility.

| COURSE CODE | MTT-353 Weaving Process Flow and Practice | | | |
|---|---|---|---|---|

| TOTAL CONTACT HOURS | 160 | | T | P | C |
|---|---|---|---|---|---|
| Theory: | 64 | | 2 | 3 | 3 |
| Practical: | 96 | | | | |

**AIM:** The main learning task of this course is to enable students to master the working principles of modern weaving equipment such as winding machines, warping machines, sizing machines, shuttleless looms, as well as new processes and technologies in various weaving production processes, become familiar with the principles and methods for formulating weaving production processes, and preliminarily master the analysis of quality problems encountered in weaving production and their solutions, in order to achieve the goal of cultivating students' comprehensive ability to apply weaving technology, To lay a solid theoretical foundation for students to engage in modern weaving production process design and maintenance of weaving equipment.

## Course Content

### 1. Introduction                                                                 4 hours
1. 1 The nature, content, and learning methods of the course.
1.2 Introduction to the basic situation of woven fabric production.

### 2. Winding                                                                        4 hours
2.1 The main structure and working principle of the winding machine.
2.2 Content and Method of Winding Process Design
2.3 Winding quality control and related technical measures

### 3. Warping                                                                       8hours
3.1 Type and selection of creels.
3.2 Working principle and application scope of batch warping machine and strip warping machine.
3.3 Two types of warping process design and calculation.
3.4 Warping quality analysis and control.

### 4. Sizing                                                                          8 hours
4.1 Formulation of commonly used slurry properties and slurry formulations.
4.2 The main structure and working principle of the sizing machine.
4.3 Sizing process design content and requirements.
4.4 Sizing quality inspection and control.

### 5. Drawing-in                                                                     4 hours
5.1 The function and selection of healds, reeds, and stop sheets.
5.2 Threading method and working principle of warp knot.

### 6. Weft Preparation                                                               4 hours
6.1 Type and working principle of weft winding machine.
6.2 Methods and requirements for yarn twist setting.

### 7. Opening                                                                        4 hours

7.1 The basic theory and concept of opening motion.

7.2 The working principle of common cam and dobby opening mechanisms.

7.3 Formulation and adjustment of opening process.

**8. Weft insertion**                                                                  **12 hours**

8.1 The working principle and process of the shuttle weft insertion mechanism.

8.2 The main types and working principles of four types of shuttleless weft insertion mechanisms.

8.3 Design and adjustment of four types of shuttleless weft insertion process parameters.

8.4 Variety adaptability of various weft insertion methods.

**9. Beating Up**                                                                        **4 hours**

9.1 The working principle and characteristics of connecting rod and cam beat-up mechanisms.

9.2 The relationship between beating motion and fabric formation.

**10. Winding and Let-off**                                                        **4 hours**

10.1 The working principle and weft density transformation of the take-up mechanism.

10.2 Type and selection of side supports.

10.3 The main types and working principles of let-off mechanisms.

10.4 Calculation of Warp Let-off Amount and Adjustment of Warp Tension

**11. Auxiliary Motion of the Loom**                                          **4 hours**

11.1 The working principle and process adjustment of the automatic stop mechanism for broken warp and weft.

11.2 Type of weft storage device and adjustment of weft storage process.

11.3 Type and process design of selvage devices.

**12. Finishing of Woven Fabrics**                                          **4 hours**

12.1 Organize the process flow and main equipment.

12.2 Standards and methods for fabric grading.

12.3 Analysis of common types and causes of textile defects.

**Recommended Book**

1.1 "Modern Weaving Technology" edited by Cai Yongdong, Donghua University Press. (2) "Woven Testing and Training" edited by Tong Yun, China Textile Press.

**List of Practical**                                                    **96 hours**
1. Understand woven products and production process sheets
2. Estimate the weaving shrinkage, finishing shrinkage, etc. of woven fabrics
3. Estimation and correction of the total warp number of woven fabrics
4. Estimation of yarn consumption for cotton woven fabrics
5. Estimation of Yarn Consumption for Filament Fabrics
6. Estimation of yarn consumption for pure cotton colored fabrics
7. Process selection and equipment selection for sizing free fabrics
8. Analysis of Batch Warping Equipment and Working Principal
9. Batch warping process parameters and analysis estimation
10. Threading device and principle
11. Warping device and principle
12. Process design training and on-board inspection of air jet looms
13. Simulated mixing experiment
14. Determination of solid content and viscosity of slurry
15. Sizing equipment and working principle
16. Sizing equipment and working principle
17. rapier loom process design and on-board inspection
18. Working principle of slitting and warping equipment
19. Design of Splitting Warping Process for Coloured Fabrics
20. Method and requirements for whole pulp arrangement
21. Colour separation and layering process design
22. Layered Reed Arrangement Process Design
23. Design of loom matching table
24. Sizing machine configuration design
25. Design of warping machine configuration
26. Understanding common defects in woven fabrics
27. Analyze the causes of defects in woven fabrics

# MTT-353 <u>Weaving Process Flow and Practice</u>

**INSTRUCTIONAL OBJECTIVES:**

1.To enable students to have a clear understanding of the nature, role, teaching content, and learning methods of the course, and to preliminarily understand the current situation of domestic and foreign woven production.

2.Through teaching, students will be able to understand the working principles of the main mechanisms of the winding machine, become familiar with the process content such as winding tension, yarn clearing, knot, etc., be able to design the process according to the variety requirements, and initially master the methods and measures for controlling the winding quality.

3.Through teaching, students will be able to understand the working principles and usage requirements of the main mechanisms of the two types of warping machines, master the warping tension control methods, and be able to design and calculate the two types of warping processes according to the variety requirements, and initially master the methods and measures for controlling the warping quality.

4. Through teaching, students will be familiar with the performance of the three commonly used sizes and related additives in factories, and be able to formulate reasonable size formulations based on variety characteristics and requirements; Understand the main mechanisms and working principles of the sizing machine, and be able to design and calculate the sizing process; Familiar with the main indicators and testing methods of sizing quality; Master the principles and methods for controlling sizing quality.

5. Through teaching, students can understand the functions of healds, reeds, and warp stop pieces, and be able to choose them reasonably; Master the main threading methods and processes, and preliminarily understand the principle of warp knot.

6. Through teaching, students will be able to understand the working principles and technological requirements of weft winding, understand the requirements for yarn twist setting, and commonly used methods and equipment for twist setting.

7. Through teaching, students will be able to master the basic theories and concepts related to opening movement, become familiar with the working principles and application scope of main opening mechanisms, and be able to formulate opening processes and conduct machine debugging according to variety requirements.

8. Through teaching, students can understand the working principles of shuttle weft insertion and projectile weft insertion; Familiar with the general working principle and process of water jet weft insertion; Focus on mastering the main mechanisms and working principles of rapier weft insertion and air jet weft insertion, and be able to reasonably formulate relevant weft insertion processes; Understand the characteristics and variety adaptability of various weft insertion methods.

9. Through teaching, students will be able to understand the types and characteristics of main beat-up mechanisms, become familiar with the relationship between beat-up processes and fabric formation, and master the impact of main weaving processes on beat-up and fabric formation.

10. Through teaching, students will be able to understand the working principles of common take-up and let-off mechanisms, understand the impact of take-up and let-off movements on fabric formation, understand the types and selection principles of side braces, and master the methods of weft density transformation and warp tension adjustment.

11. Through teaching, students will understand the role of self stopping mechanisms, weft storage devices, and selvage devices in modern looms, and become familiar with the types of auxiliary mechanisms required on various looms and related process adjustment methods.

12. Through teaching, students can understand the finishing process of woven fabrics, become familiar with fabric grading methods, and master the methods for analysing the causes of various textile defects and their solutions

| COURSE CODE | MTT-362 Dyeing and Finishing Process Practice |
|---|---|

| TOTAL CONTACT HOURS: | 128 | | T | P | C |
|---|---|---|---|---|---|
| Theory: | 32 | | 1 | 3 | 2 |
| Practical: | 96 | | | | |

**AIM:** The main learning task of this course is to enable students to understand the processing techniques of common textile pretreatment, dyeing, printing, and finishing. Through the teaching of this course, students must achieve the following goals for the basic knowledge and skills of dyeing and finishing technology.

## Course Content

**1. Chemical Fibre Dyeing and Finishing Process Practice**          **8 hours**
1.1 Polyester Dyeing and Finishing Process Practice.
1.2 Practice of nylon dyeing and finishing process.
1.3 Dyeing and Finishing Process Practice of Acrylic Fibre
1.4 A Stretching Method for Leveling Mesh.
1.5 Can implement the pigment direct printing process.

**2. Dyeing and Finishing Process Practice of Cotton Fabrics**          **8 hours**
2.1 Practice of Cotton Pretreatment Process.
2.2 Practice of cotton dyeing process.
2.3 Practice of cotton finishing process
2.4 The reactive dye dyeing process will be implemented.
2.5 Can implement a simple direct dye tie dyeing process.
2.6 Able to implement cotton finishing process

**3. Silk Wool Dyeing and Finishing Process Practice**          **8 hours**
3.1 Silk Dyeing and Finishing Process Practice
3.2 Practice of Wool Dyeing and Finishing Process
3.3 The pretreatment process for silk fabrics will be implemented.
3.4 Can implement acid dye dyeing process.

**4. Practice of Dyeing and Finishing Process for Polyester Cotton Blending**          **8 hours**
4.1 Practice of Pretreatment Process for Polyester Cotton Blending.
4.2 Dyeing Practice of Polyester Blending.
4.3 Understand the pretreatment process of blending.
4.4 Understand the blended dyeing process.

## Recommended Book
"Dyeing and Finishing Technology Experimental", Edited by Cai Suying, Donghua University Press, June 2020.

**List of Practical**                                          **96 hours**

1. Pre-treatment and dyeing of polyester fabric

2. Printing of polyester fabric

3. Dyeing and Finishing of Nylon Fabric

4. Dyeing and Finishing of Acrylic Fabric

5. Pre-treatment of cotton fabrics

6. Direct Dyeing of Cotton Fabrics

7. Reactive Dyeing of Cotton Fabrics

8. Colour fastness testing of cotton fabrics

9. Soft finishing of cotton fabrics

10. Dyeing and Finishing of Cotton T-shirt Fabric

11. Pre-treatment of T/C blended fabric

12. Dyeing of 3.2T/C blended fabric

13.  Pre-treatment of silk fabrics

14. Dyeing of silk fabrics

15. Dyeing of wool fibers

**Dyeing and Finishing Process Practice**

**INSTRUCTIONAL OBJECTIVES:**

### 1. Professional objectives

1.1 Know the basic requirements for dyeing and finishing water and commonly used dyeing and finishing auxiliaries;

1.2 Know the pre-treatment process of cotton, polyester, wool, and other fabrics;

1.3 Be able to dye with direct dyes, reactive dyes, acid dyes, vat dyes, cationic dyes, and disperse dyes;

1.4 Know the concepts of pigment printing, direct printing, anti dye printing, and discharge printing, as well as the composition of the printing paste, and be able to use pigment for printing;

1.5 Know the general finishing, resin finishing, and special finishing of fabrics, and be able to conduct flame retardant and waterproof finishing on fabrics and test their effects.

### 2. Skill Objectives

2.1 Have a good ability to absorb new technologies and knowledge;

2.2 Have good ability to analyse and solve practical problems;

2.3 Have the ability to search for information, literature, etc;

2.4 Have good logic and scientific thinking methods.

### 3. Quality objectives

3.1 Have good ideological and political quality, code of conduct, and professional ethics;

3.2 Strong planning, organization, and coordination skills;

3.3 Have strong pioneering and innovative abilities;

3.4 Have strong oral and written expression skills and interpersonal communication skills;

3.5 Have a spirit of hard work and dedication;

3.6 Have a good awareness of environmental protection and energy conservation.

**COURSE CODE**  **MTT-372  Knitted Fabric Design and Weaving**

| **TOTAL CONTACT HOURS:** | **128** | **T** | **P** | **C** |
|---|---|---|---|---|
| Theory: | 32 | **1** | **3** | **2** |
| Practical: | 96 | | | |

**AIM:**  According to the skill requirements of positions such as knitting fabric technologists, the training goal of this course is to cultivate students with good moral qualities and a solid ability to design knitted fabric structures using flat knitting machines.

**Course Content**

**1. Fabric analysis and sample weaving of basic weft knitted fabrics          16 hours**
1.1 Basic professional knowledge of knitted fabrics
1.2 Basic operation of flat knitting machine
1.3 Characteristics and typical fabric analysis of weft flat stitch, rib stitch, double reverse stitch, and double rib stitch (variable stitch)
1.4 Sample trial weaving

**2. Fabric Analysis and Sample Test Weaving of Weft Knitted Pattern and Colour Weaving 16 hours**
2.1 Characteristics and Typical Fabric Analysis of Weft Knitted Jacquard Weaving
2.2 Characteristics and Typical Fabric Analysis of Loop Weaving
2.3 Characteristics and Typical Fabric Analysis of Yarn Addition Weaving
2.4 Characteristics and Typical Fabric Analysis of Cushion Weaving
2.5 Characteristics and Typical Fabric Analysis of Loop Weaving
2.6 Characteristics and Typical Fabric Analysis of Plush Weaving
2.7 Sample trial weaving

**List of Practical                                              96 hours**
1. Design and weaving of flat needle woven fabrics
2. Rib weave fabric design and weaving
3. Design and weaving of double reverse weave fabrics
4. Design and weaving of circular weave fabrics
5. Design and weaving of corrugated fabric
6. Design and weaving of circular weave fabrics
7. Design and weaving of circular weave fabrics
8. Design and weaving of fabric with added yarn weave
9. Air layer weave fabric design and weaving
10. Air layer weave fabric design and weaving
11. Knitting of sweater accessories  Ⅰ
12. Knitting of sweater accessories  Ⅱ
13. Knitting of sweater accessories  Ⅲ
14. Knitting of sweater accessories  Ⅳ

**Recommended textbooks**
He Qingyu. "Introduction to Knitting Technology". Beijing: China Textile Press.

# MTT-372   Knitted Fabric Design and Weaving

**INSTRUCTIONAL OBJECTIVES:**

**1. Knowledge objectives**: Students can understand the basic knowledge related to knitting production, master the winding operation ability and troubleshooting ability, be skilled in debugging and operating the flat knitting machine, identify and eliminate fabric defects during the operation process, master the knitting principles of various types of knitted fabrics, and be able to design and weave various types of knitted fabric structures.

**2. Competency objectives:** During the course of learning, cultivate students' ability to collect and organize information, develop and implement work plans, draw various knitted fabric weave patterns and weave patterns, and exercise the ability to integrate theory and practice;

**3. Quality objectives:** During the implementation of the task plan, cultivate students' basic qualities of analysing and solving problems, exercise their self-learning ability to acquire new knowledge and technology, cultivate a sense of teamwork and good professional ethics, develop innovative abilities, and improve quality awareness and safety awareness.

| MODERN TEXTILE TECHNOLOGY YEAR 3 | | | |
|---|---|---|---|
| **COURSE CODE**    **MTT-382**   **Clothing, Cutting and Sewing** | | | |

| **TOTAL CONTACT HOURS:** | **128** | **T** | **P** | **C** |
|---|---|---|---|---|
| Theory: | 32 | **1** | **3** | **2** |
| Practical: | 96 | | | |

**AIM:**

The training goal of this course is to cultivate students with good professional ethics and solid professional skills in clothing plate making based on the needs of positions such as clothing designers, technicians, process designers, and quality inspectors. After completing this course, students should be able to design shirt patterns, make shirt production process sheets, and sew sample shirts.

**Course Content**

**1. Shirt sample making**

**1.1 Shirt structure design**                                           **4 hours**

1.1.1 Master the basic methods and steps for drawing clothing structure drawings

1.1.2 Familiar with the body structure characteristics of the human body

1.1.3 Understand the relationship between the body structure and the human body

**1.2 Production of shirt wool pattern**                               **4 hours**

1.2.1 Understand the concept of wool pattern

1.2.2 Master the sewing methods of common shirt sewing patterns

**1.3 Shirt Cutting**                                                       **4 hours**

1.3.1 Understanding the Performance of Surface Accessories

1.3.2 Master the cutting requirements of shirt pattern

**1.4 Shirt making**                                                       **4 hours**

1.4.1 Familiar with sewing equipment and common sewing methods

1.4.2 Master the structure of female shirts

**2. Men's shirt comes with a single plate**

**2.1 Body structure design of men's shirts**                         **4 hours**

2.1.1 Be familiar with the body shape and structural characteristics of the human body

2.1.2 Understand the relationship between the body structure and the human body

**2.2 Production of men's shirt wool pattern**                         **4 hours**

2.2.1 Understanding the concept of wool pattern

**2.3 Men's Shirt Cutting**                                              **4 hours**

2.3.1 Master the cutting requirements of men's shirt pattern

**2.4 Men's shirt production**                                           **4 hours**

2.4.1 Master the quality inspection method of men's shirts

**Reference Book/ Selection of teaching materials**

"Clothing Structure Drawing and Technology", Peng Liyun, China Textile Press.

**List of Practical**                                               **96 hours**

1. Use planar platemaking methods to complete the pattern structure design of designated shirts

2. Copy the net pattern

3. Design seam allowance

4. Handle seam edge chamfers

5. Dimension templates

6. Arrange materials reasonably

7. Ability to cut patterns

8. Sew female shirts

9. Write quality requirements for blouses

10. Use planar platemaking methods to complete the pattern structure design of designated men's shirts

11. Duplicate the net pattern

12. Design seam allowance

13. Handle seam edge chamfers

14. Dimension templates

15. Complete the reasonable layout of men's shirts

16. Skinning and cutting of men's shirts

17.  Sew men's shirts

# MTT-382-Clothing Cutting and Sewing

**INSTRUCTIONAL OBJECTIVES:**

**1. Professional competence:**

1.1 Examination of shirt clothing process sheet and sample clothing analysis

1.2 Will make a shirt customer confirmation sample

1.3 Able to sew shirts and adjust patterns based on sample clothing inspection.

**2. Method and ability:** Be able to formulate reasonable work plans and schemes based on work tasks, and be able to apply the basic principles of clothing plate making to specific fashion styles, drawing inferences from one example, bypassing by analogy.

**3. Social skills:** teamwork ability, communication skills, prudent work attitude, sense of responsibility, hardworking.

| MODERN TEXTILE TECHNOLOGY YEAR 3 | | | | |
|---|---|---|---|---|
| **COURSE CODE** | **MTT-392-Textile innovation project training** | | | |

| | | | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **TOTAL CONTACT HOURS:** | 192 | | | | |
| Theory: | 0 | | **0** | **6** | **2** |
| Practical: | 192 | | | | |

**AIM:** After completing this course, students can learn to think creatively, master professional knowledge related to projects, and complete innovative projects independently or in groups under the guidance of teachers, with practical results.

**Course Content**

**Project 1: Find professional innovation channels and determine topics          96hours**

1. Mobilization for practical training, innovative design of coloured fabrics task allocation, planning, market research

2. Innovative Design of Coloured Fabrics (Market Research)

3. Innovative CAD Design Scheme for Coloured Fabrics

4. Group discussion on innovative design solutions for colour woven CAD

5. Innovative Design of Coloured Fabrics (Sample Trial Weaving)

6. Innovative design of coloured fabrics with 3 small samples

7. Comparison of "CARDED and COMBED" yarn on knitted fabric.

8. Comparison of "CARDED and COMBED" yarn on woven fabric.

9. Effects of different yarn structures on yarn quality

10. Compare the yarn characteristics and machine efficiency of Ring Spinning and Rotor Spinning.

11. Effects of water hardness and result comparison of the following process:

    I.     Pretreatment (or)

    II.    Reactive Dyeing (or)

    III.    Reactive Printing (or)

    IV.    Pigment Printing

**Project 2: Complete simple tasks with the help of a mentor          96hours**

1. Complete project tasks and submit phased results

2. Master professional practical operation skills

3. Master textile related professional knowledge

4. Master literature retrieval methods

5. Master the requirements and format for writing the proposal report

6. Be able to search and analyze literature

7. Find and determine innovative projects

8. Be able to write an opening report

**Project Options**
1. Spinning

2. Weaving

3. Dyeing, Printing & Finishing

4. Garments manufacturing

# MTT-392- Textile innovation project training

**INSTRUCTIONAL OBJECTIVES:**

**1. Knowledge objectives**

1.1 Understand necessary innovation theories;

1.2 Master the common sense of scientific and technological paper writing;

1.3 Master theoretical knowledge related to the project.

**2. Quality objectives**

2.1 Have clear work ideas and scientific and rigorous work style;

2.2 Positive work attitude and sense of responsibility;

2.3 Have strong lifelong learning ability;

2.4 Have a hard working spirit and the ability to work together;

2.5 Have a pioneering and innovative spirit.

**3.Skill Objectives**

3.1 Have innovative thinking ability;

3.2 Find the ability to determine textile innovation projects;

3.3 Ability to retrieve domestic and foreign literature;

3.4 Have the ability to write a simple proposal report.

3.5 Have professional practical operation ability;

# LIST OF LABORATORIES SUBJECT WISE

| SUBJECT TITLE | NAME OF LABORATORY / WORKSHOP |
| --- | --- |
| Applied Chemistry | Chemistry Laboratory |
| Applied Physics | Physics Laboratory |
| Testing of textile materials | Textile Materials Experimental Center |
| Fabric Analysis and Sample Weaving Textile innovation project training | Textile Design Training Center |
| Spinning Process Flow and Practice Weaving Process Flow and Practice | Textile Intelligent Manufacturing Center |
| Computer Applications Textile Art and Art Design | Textile CAD machine room |
| Dyeing and Finishing Process Practice | Dyeing and Finishing Training Center |
| Knitted Fabric Design and Weaving | Knitting Design Training Center |
| Clothing Cutting and Sewing | Clothing Production Training Center |

## NAMES OF REVISION COMMITTEE MEMBERS

| Sr # | Name | Designation | Organization | Contact / E.Mail |
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## Occupations & Job Opportunities

After completing this DAE in Modern Textile Technology, following are the job Occupations and opportunities for them.

1. Trainee supervisor in Spinning production

2. Officer in spinning Q.C Department

3. Trainee supervisor in weaving production

4. Officer in weaving Q.C Department

5. Trainee supervisor in knitting production

6. Officer in knitting Q.C Department

7. Trainee supervisor in wet processing

8. Officer in wet processing Q.C Department

9. Trainee supervisor in garments production

10. Officer in Garment Q.C Department

Following are the designations below the level of DAE in Textile Industry:

1. Helper

2. Checker

3. Assistant operator

4. Operator

5. Head operator