# B.Sc. STATISTICS

**SYLLABUS - 2017**

**SCHOOLS OF EXCELLENCE**
**with**
**CHOICE BASED CREDIT SYSTEM (CBCS)**


**SCHOOL OF COMPUTING SCIENCES**
**St. JOSEPH'S COLLEGE (Autonomous)**
Special Heritage Status Awarded by UGC
Accredited at 'A' Grade (3rd cycle) by NAAC
College with Potential for Excellence Conferred by UGC
DBT-STAR & DST-FIST Sponsored College
**TIRUCHIRAPPALLI - 620 002, INDIA**

# SCHOOLS OF EXCELLENCE
# WITH CHOICE BASED CREDIT SYSTEM
# (CBCS)

## UNDERGRADUATE COURSES

St. Joseph's College (Autonomous), a pioneer in higher education in India, strives to work towards the academic excellence. In this regard, it has initiated the implementation of five "Schools of Excellence" from the academic year 2014 – 15, to standup to the challenges of the 21st century.

Each School integrates related disciplines under one roof. The school system allows the enhanced academic mobility and enriched employability of the students. At the same time this system preserves the identity, autonomy and uniqueness of every department and reinforces their efforts to be student centric in curriculum designing and skill imparting. These five schools will work concertedly to achieve and accomplish the following objectives:

- Optimal utilization of resources both human and material for the academic flexibility leading to excellence.
- Students experience or enjoy their choice of courses and credits for their horizontal mobility.
- The existing curricular structure as specified by TANSCHE and other higher educational institutions facilitate the Credit-Transfer Across the Disciplines (CTAD) - a uniqueness of the choice based credit system.
- Human excellence in specialized areas
- Thrust in internship and / or projects as a lead towards research and
- The multi-discipline nature of the newly evolved structure (School System) caters to the needs of stake-holders, especially the employers.

### What is Credit system?

Weightage to a course is given in relation to the hours assigned for the course. Generally one hour per week has one credit. For viability and conformity to the guidelines credits are awarded irrespective of the teaching hours. The following Table shows the correlation between credits and hours. However, there could be some flexibility because of practicals, field visits, tutorials and nature of project work.

For UG courses, a student must earn a minimum of 150 credits as mentioned in the table below. The total number of minimum courses offered by a department are given in the course pattern.



## SUMMARY OF HOURS AND CREDITS
## UG COURSES

| Part | Semester | Specification | No. of Courses | Hours | Credits | Total Credits |
|---|---|---|---|---|---|---|
| I | I-IV | **Languages** (Tamil/Hindi/French/Sanskrit) | 4 | 16 | 12 | **12** |
| II | I-IV | **General English** | 4 | 20 | 12 | **12** |
| III | I-VI | **Core** | | | | |
| | | Theory | 11-16 | | | |
| | | Practicals | 3-6 | | | |
| | V-VI | Project Work | 1 | 90 | 60 | |
| | IV-VI | **Core Electives** | 3 | 12 | 12 | |
| | V | Self-paced Learning (Partial Online Course) | 1 | - | 2 | |
| | VI | Comprehensive Examination | 1 | - | 2 | |
| | I-VI | **Allied** | 4/6 | 24 | 20 | |
| | III & V | **Extra Credit Courses** | **2** | **-** | **(4)** | |
| | VI | **Internship** | 1 | - | 2 | **98** |
| 1V | | **Skilled Based Electives:** | | | | |
| | V | Between Schools (BS) | 1 | 2 | 2 | |
| | VI | Within School (WS) | 1 | 2 | 2 | |
| | V | **Inter Departmental Courses (IDC)** | | | | |
| | | Soft Skills / NCC | 1 | 2 | 2 | |
| | | **Non-Major Courses (NMC)** | | | | |
| | I | Communicative English | 1 | - | 5 | |
| | II | Computer Literacy | 1 | 2 | 2 | |
| | III | Environmental Studies (Partial Online Course) | 1 | 2 | 2 | |
| | I-IV | **Value Education** | 4 | 8 | 8 | **23** |
| V | I-V | **SHEPHERD & Gender Studies** | - | - | | |
| | I-V | **AICUF, Fine Arts, Nature Club, NCC, NSS** | - | - | - | |
| | V | **Career Guidance & Training** | **-** | **-** | **-** | **5** |
| | | **TOTAL** | | **180** | **150** | **150 (+4 extra credits)** |

### Course Pattern

The Undergraduate degree course consists of five vital components. They are as follows:

Part -I : Languages (Tamil / Hindi / French / Sanskrit)
Part-II : General English
Part-III : Core Course (Theory, Practical, Core Electives, Allied, Project, Internship and Comprehensive Examinations)
Part-IV : SBE, NMC, Value Education, Soft Skills/National Cadet Corps and Environmental Studies (EVS)
Part-V : Community Service (SHEPHERD) and Gender Studies, AICUF, Fine Arts, Nature Club, NCC, NSS, etc.

**Non-Major Courses (NMC)**

There are three NMC's – Communicative English, Computer Literacy and Environmental Studies offered in the I, II & III Semesters respectively.

**Extra Credit Courses**

In order to facilitate the students gaining extra credits, the extra credit courses are given. There are two extra credit courses – Massive Open Online Courses (MOOC) and Skill-based Course – offered in the III and V Semesters respectively.

According to the guidelines of UGC, the students are encouraged to avail this option of enriching by enrolling themselves in the MOOC provided by various portals such as SWAYAM, NPTEL, etc. Skill based course is offered by the department apart from their regular class hours.

**Value Education Courses**

There are four courses offered in the first four semesters for the First & Second UG students.

**Non-Major Elective / Skill Based Elective**

These courses are offered in two perspectives as electives "Within School" (WS) and "Between School" (BS).

**Subject Code Fixation**

The following code system (11 characters) is adopted for Under Graduate courses:

| Year of Revision | UG Code of the Dept | Semester | Specification of the Part | Subject Category | Running no. in that part |
|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 17 | U## | *x* | *x* | *xx* | *xx* |
| **17** | **UST** | **1** | **3** | **2** | **1** |

***For Example*** :

I B.Sc. Statistics, first semester **Descriptive Statistics**
The code of the paper is 17UST130201.
Thus, the subject code is fixed for other subjects.



**Subject Category**

00 - Languages (Tamil / Hindi / French / Sanskrit)
01 - General English
02 - Core (Theory, Practical, Comprehensive Exams, Internship and Project)
03 - Core Electives
04 - Allied
05 - Extra Credit Courses
06 - Skill Based Electives (BS) & (WS)
07 - Soft Skill
08 - NMC (Communicative English, Computer Literacy/SAP)
09 - EVS (Environmental Studies)
10 - Value Education
11 - Community Service (SHEPHERD) and Gender Studies
12 - AICUF / Nature Club / Fine Arts / NCC / NSS etc.

**EXAMINATION: Continuous Internal Assessment (CIA)**

| **UG - Distribution of CIA Marks** | |
|---|---|
| **Passing Minimum: 40 Marks** | |
| Library Referencing | 5 |
| 3 Components | 35 |
| Mid-Semester Test | 30 |
| End-Semester Test | 30 |
| **CIA** | **100** |

**MID-SEM & END–SEM TEST**

Centralised – Conducted by the office of COE

1. Mid-Sem Test & End-Sem Test: (2 Hours each); will have Objective + Descriptive elements; with the existing question pattern PART-A, PART-B, and PART-C.
2. CIA Component III for UG & PG will be of 15 marks and compulsorily objective multiple choice question type.
3. The CIA Component III must be conducted by the department / faculty concerned at a suitable computer centres.
4. The 10 marks of Part-A of Mid-Sem and End-Sem Tests will comprise only: **Objective Multiple Choice Questions**; **True / False**; and **Fill-in the Blanks**.
5. The number of hours for the 5 marks allotted for Library Referencing work would be 30 hours per semester. The marks scored out of 5 will be given to all the courses of the semester.
6. English Composition once a fortnight will form one of the components for UG General English.

**SEMESTER EXAMINATION**

Testing with Objective and Descriptive questions

**Part-A: Objective MCQs only (30 Marks)**

Answers are to be marked on OMR score-sheet. The OMR score-sheets will be supplied along with the Main Answer Book. 40 minutes after the start of the examination the OMR score-sheets will be collected

**Part-B & C: Descriptive (70 Marks )**

**Part-B:** 5 x 5 = 25 marks (Inbuilt Choice);
**Part-C**: 3 x 15 = 45 marks; 3 out of 5 questions (Open Choice).

**The Accounts Paper of Commerce will have**
**Part-A**: Objective = 25
**Part-B**: Descriptive 3 x 25 = 75 marks.

**Duration of Examination must be rational;** proportional to teaching hours 90 minute-examination / 50 Marks for courses of 2/3 hours/week (all Part IV UG Courses) 3-hours examination for courses of 4-6 hours/week.

**Grading System**

**1. Grading**

The total marks will be calculated by adding both CIA and the end-semester examinations for each of the courses. The total marks thus obtained will then be graded as per details provided in the following Table-1.

From the second semester onwards, the total performance within a semester and the continuous performance starting from the first semester are indicated by Semester **Grade Point Average (GPA)** and **Cumulative Grade Point Average (CGPA)** respectively. These two are calculated by the following formulae:

$$\text{GPA} = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i}, \qquad \text{WAM (Weighted Average Marks)} = \frac{\sum_{i=1}^{n} C_i M_i}{\sum_{i=1}^{n} C_i}$$

*where,* '$C_i$' is the Credit earned for the Course-*i,*
'$G_i$' is the Grade Point obtained by the student for the Course '*i*',
'M' is the marks obtained for the course '*i*', and
'*n*' is the number of Courses **Passed** in that semester.

CGPA: Average GPA of all the Courses starting from the first semester to the current semester.

**2. Classification of Final Results**

i) For each of the three parts, there shall be separate classification on the basis of the CGPA, as indicated in the following Table-2.



ii) For the purpose of declaring a candidate to have qualified for the Degree of Bachelor of Arts/Science/Commerce/Management/Literature as Outstanding/Excellent/Very Good/Good/Above average/Average, the marks and the corresponding CGPA earned by the candidate in Part-III alone will be the criterion, provided he/she has secured the prescribed passing minimum in the LCs and the ELCs.

iii) Grade in Part-IV and Part-V shall be shown separately and it shall not be taken into account for classification.

iv) Absence from an examination shall not be taken as an attempt.

**Table-1: Grading of the Courses**

| Marks Range | Grade Point | Corresponding Grade |
|---|---|---|
| 90 and above | 10 | O |
| 80 and above but below 90 | 9 | A+ |
| 70 and above but below 80 | 8 | A |
| 60 and above but below 70 | 7 | B+ |
| 50 and above but below 60 | 6 | B |
| 40 and above but below 50 | 5 | C |
| Below 40 | 0 | RA |

**Table-2: Final Result**

| CGPA | Classification of Final Results | Corresponding Grade |
|---|---|---|
| 9.00 and above | O | Outstanding |
| 8.00 to 8.99 | A+ | Excellent |
| 7.00 to 7.99 | A | Very Good |
| 6.00 to 6.99 | B+ | Good |
| 5.00 to 5.99 | B | Above Average |
| 4.00 to 4.99 | C | Average |
| Below 4.00 | RA | Re-appearance |

Credit based weighted Mark System isadopted for individual semesters and cumulative semesters in the column 'Marks Secured' (for 100).
A Pass in SHEPHERD will continue to be mandatory although the marks will not count for the calculation of the CGPA.

**Declaration of Result:**

Mr./Ms. _____ has successfully completed the Under Grduate in _____ programme. The candidate's Cumulative Grade Point Average (CGPA) in Part-III is _____ and the class secured is _____ by completing the minimum of 150 credits. The candidate has acquired _____ (if any) more credits from SHEPHERD / AICUF/ Fine Arts / Sports & Games / NCC / NSS / Nature Club etc. The candidate has also acquired _____ (if any) extra credits offered by the parent department courses.

## B. STATISTICS

### Course Pattern - 2017 Set

| Sem | Part | | Code | Course | Hr | Cr |
|---|---|---|---|---|---|---|
| I | I | Language | 17UGT110001 | Tamil I/Hindi I / French I / Sanskrit I | 4 | 3 |
| | II | English | 17UGE120101 | General English I | 5 | 3 |
| | III | Core | 17UST130201 | Descriptive Statistics | 7 | 4 |
| | | | 17UST130202 | Computational Statistics- I | 4 | 2 |
| | | | 17UST130203 | Computer Lab - I | 2 | 2 |
| | | Allied | 17UST130401 | Allied 1: Computers in Statistics -I | 6 | 5 |
| | IV | NMC | 17UCE140801 | Communicative English | - | 5 |
| | | V. Edn | 17UFC141001 | Essentials of Humanity | 2 | 2 |
| | | | | **Total for Semester I** | **30** | **26** |
| II | I | Language | 17UGT210002 | Tamil II/Hindi II/French II/Sanskrit II | 4 | 3 |
| | II | English | 17UGE220102 | General English II | 5 | 3 |
| | III | Core | 17UST230204 | Probability Theory | 7 | 5 |
| | | | 17UST230205 | Computational Statistics- II | 2 | 2 |
| | | | 17UST230206 | Computer Lab – II | 2 | 1 |
| | | Allied | 17UST230402 | Allied 1: Computers in Statistics -II | 6 | 5 |
| | IV | NMC | 17UCE240802 | Computer Literacy | 2 | 2 |
| | | V. Edn | 17UFC241002 | Fundamentals of Human rights | 2 | 2 |
| | | | | **Total for Semester II** | **30** | **23** |
| III | I | Language | 17UGT310003 | Tamil III/Hindi III/French III/Sanskrit III | 4 | 3 |
| | II | English | 17UGE320103 | General English III | 5 | 3 |
| | III | Core | 17UST330207 | Discrete Probability Distributions | 6 | 4 |
| | | | 17UST330208 | Continuous Probability Distributions | 5 | 4 |
| | | Allied | 17UST330403A | Allied II: Mathematics - I (or) | 6 | 5 |
| | | | 17UST330403B | Allied II: Accountancy – I | | |
| | | Extra Credit Course | 17UST330501 | Massive Open Online Course | - | (2) |
| | IV | NMC | 17UCE340901 | Environmental Studies | 2 | 2 |
| | | V. Edn | 17UFC341003A | Formation of Youth –I (or) | 2 | 2 |
| | | | 17UFC341003B | Religious Doctrine - I | | |
| | | | | **Total for Semester III** | **30** | **23+(2)** |
| IV | I | Language | 17UGT410004 | Tamil IV/Hindi IV/French IV/Sanskrit IV | 4 | 3 |
| | II | English | 17UGE420104 | General English IV | 5 | 3 |
| | III | Core | 17UST430209 | Estimation Theory | 4 | 3 |
| | | | 17UST430210 | Testing of Hypothesis | 5 | 3 |
| | | Core Elec (WD) | 17UST430301A | Core Elec-I (WD): Sampling Theory (or) | 4 | 4 |
| | | | 17UST430301B | Real Analysis | | |
| | | Allied | 17UST430404A | Allied II: Mathematics - II (or) | 6 | 5 |
| | | | 17UST430404B | Allied II: Accountancy - II | | |
| | IV | V. Edn | 17UFC441004A | Formation of Youth -II (or) | 2 | 2 |
| | | | 17UFC441004B | Religious Doctrine - II | | |
| | | | | **Total for Semester IV** | **30** | **23** |



| Sem. | Part | | Code | Course | Hr | Cr |
|---|---|---|---|---|---|---|
| V | III | Core | 17UST530211 | Design of Experiments | 4 | 3 |
| | | | 17UST530212 | Statistical Packages (SPSS) – Practical | 4 | 3 |
| | | | 17UST530213 | Linear Models, Econometrics & Random Processes | 5 | 3 |
| | | | 17UST530214 | Operations Research – I | 5 | 3 |
| | | | 17UST530215 | Numerical Mathematics | 4 | 3 |
| | | Extra Credit Course | 17UST530502 | Extra Credit Course | - | (2) |
| | | Core Elec I (WS) | 17UST540302 | Actuarial Statistics | 4 | 4 |
| | | Self Paced Learning | 17UST540216 | Data Analysis using R (Partial Online Course) | - | 2 |
| | IV | SBE (BS) | 17UST540601 | Data Analysis for Comp. Exams | 2 | 2 |
| | | IDC | 17USS540701A | Soft Skills | 2 | 2 |
| | | | 17USS540701B | National Cadet Corps (NCC) | | |
| | | | | **Total for Semester-V** | **30** | **25** |
| VI | III | Core | 17UST630217 | R Language Practical | 7 | 4 |
| | | | 17UST630218 | Engineering Statistics | 7 | 4 |
| | | | 17UST630219 | Operations Research – II | 7 | 4 |
| | | | 17UST630220 | Comprehensive Examination | - | 2 |
| | | | 17UST630221 | Internship | - | 2 |
| | | | 17UST630222 | Project | 3 | 3 |
| | | Core Elec II (WS) | 17UST630303 | Applied Statistics | 4 | 4 |
| | IV | SBE | 17UST640602 | Statistics for Management | 2 | 2 |
| | | | | **Total for Semester-VI** | **30** | **25** |
| I-IV | V | Shepherd | 17UCW651101 | Community Service Work (SHEPHERD) & Gender Studies | - | 5 |
| | | | | **Total for All Semesters** | **180** | **150+(4)** |

**Programme Outcomes (POs):**

1. Undergraduate students are to be passionately engaged in initial learning with an aim to think differently as agents of new knowledge, understanding and applying new ideas in order to acquire employability/ self-employment.
2. Undergraduate students are trained to take up higher learning programmes.
3. Undergraduate students are made to be competent and socially responsible citizen of India.
4. Undergraduate students are to be exposed to technical, analytical and creative skills.
5. Undergraduate students are to be imparted with a broad conceptual background in the Biological sciences / Computing sciences / Languages and culture / Management studies / Physical sciences.

**Programme Specific Outcomes (PSOs):**

1. Critical and Analytical Thinking Skills
2. Problem Skills
3. Communication and Presentation Skills
4. Teamwork Skills
5. Knowledge
6. Information Technology/Techniques
7. Ethics and Social Responsibility
8. Employability Enhancement

**To find out Relationship:**

$$\textbf{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$$

$$\textbf{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Values Scaling:**

| 01% -20% | 21% -40% | 41% -60% | 61% -80% | 81% -100% |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

**Result:**

| Grade Point | Results |
|---|---|
| 0.1 - 1.0 | Very Poor Relationship |
| 1.1 - 2.0 | Poor Relationship |
| 2.1 - 3.0 | Moderate Relationship |
| 3.1 - 4.0 | High Relationship |
| 4.1 - 5.0 | Very High Relationship |



**பருவம்: 1** **மணி நேரம்: 4**

**17UGT110001** **புள்ளிகள்: 3**

## பொதுத்தமிழ்-I

**பாடத்தின் விளைவு**

- சமூக மாற்றச் சிந்தனைகளை உள்ளடக்கிய தற்கால இலக்கியப்பரப்பை அறிதல்
- புதுக்கவிதை, சிறுகதை, உரைநடை ஆகியவற்றின் இலக்கியத்திறன் கண்டறிதல்.
- சந்திப்பிழையின்றி எழுதும் திறன் பெறுதல்.
- வாழ்க்கை வரலாற்றுக் கட்டுரைகளை வாசிக்கும் திறன் பெறுதல்.
- அன்றாடப் பயன்பாட்டிலுள்ள ஆங்கிலச்சொற்களுக்குப் பொருத்தமான சொற்களை உருவாக்கச்செய்தல்
- அரசுப்போட்டித் தேர்வுகளுக்கேற்ப தமிழ்மொழியில் பயிற்சி அளித்தல்.

**அலகு-1** மகாகவி பாரதியார் கவிதைகள்
பாரதிதாசன் கவிதைகள்
நாமக்கல் கவிஞர் கவிதைகள்
உரைநடை - முதல் மூன்று கட்டுரைகள் (12 மணி நேரம்)

**அலகு-2** பாவலரேறு பெருஞ்சித்திரனார் பாடல்கள்
கண்ணதாசன் கவிதைகள்
இலக்கிய வரலாறு (பக். 239- 300)
இலக்கணம் -வலிமிகும் இடங்கள் (14 மணி நேரம்)

**அலகு-3** சமூகக்கவிதைகள்
இலக்கிய வரலாறு (பக்.300 -362)
சிறுகதை - முதல் ஆறு சிறுகதைகள் (14 மணி நேரம்)

**அலகு-4** அரசியல் கவிதைகள்
இலக்கணம் - வலி மிகா இடங்கள் (10 மணி நேரம்)

**அலகு-5** மொழிபெயர்ப்புக்கவிதைகள்
சிறுகதை- 7 முதல் 12 முடிய உள்ள சிறுகதைகள்
உரைநடை- 4முதல் 6 முடிய உள்ள கட்டுரைகள்
(10 மணிநேரம்)

**பாடநூல்**


1. பொதுத்தமிழ்- செய்யுள் திரட்டு- தமிழாய்வுத்துறை வெளியீடு-2017-2020
2. சமூகவியல் நோக்கில் தமிழ் இலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2
3. உரைநடை நூல் - தமிழாய்வுத்துறை வெளியீடு.
4. சிறுகதைத்தொகுப்பு : (நாட்டுடைமையாக்கப்பட்ட படைப்பாளர்களின் சிறுகதைகள்), தமிழாய்வுத்துறை வெளியீடு.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester 1 | Course Code 17UGT110001 | | | | | Title of the Paper தொழிற்தமிழ்-1 | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 4 | 4 | 3 | 3 | 4 | 5 | 4.2 | |
| CO2 | 5 | 5 | 5 | 3 | 4 | 5 | 4 | 5 | 4 | 3 | 3 | 4 | 5 | 4.2 | |
| CO3 | 4 | 4 | 5 | 4 | 3 | 4 | 3 | 5 | 4 | 3 | 3 | 4 | 5 | 3.9 | |
| CO4 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 5 | 5 | 5 | 4.5 | |
| CO5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 5 | 5 | 4.0 | |
| CO6 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 5 | 3.8 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.1 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

*Note:*

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

*Values Scaling:*

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semestre: I** **Hours/Week: 4**
**17UGH110001** **Credits : 3**

## HINDI-I

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* Knowledge and understanding of Hindi Conversations
* Improvement of the writing skills.
* Knowledge of Grammar forms
* Effective communicative skills in Hindi.
* The introduction of socially relevant subjects in Modern Hindi Literature
* Appreciation the features of Modern Hindi Prose.

**Unit- I** **8 hours**

Dr Abdul Kalam, Ling Badaliye, Vachan Badaliye, Baathcheeth-Aspathal Mein

**Unit-II** **12 hours**

Hamara Rajchinha, Noun Ling, Kaarak Chinha, Chaar Baayee, Baathcheeth, Dookan Mein

**Unit-III** **12 hours**

Moun hee mantra hai, Vachan, Kaarak, Vishwamitra Ka yagna, Baathcheeth, Hotel mein

**Unit-IV** **14 hours**

Veer Shivaji, Pronoun, Danush Yagna, Baathcheeth-Maidaan mein

**Unit-V** **14 hours**

Rajatilak Kee Thaiyaree, Adjectives, Baathcheeth-Pareeksha ke baare mein

**Books Recommended**


1. Dakshina Bharathi Hindi Prachar Sabha, Thiagaraya Nagar, Chennai – 600 017, Subhodh Hindi Patamala-2, Bharath Milap, Bharath-1, 2016.
2. Ramdev, Vyakaran Pradeep, Hindi Bhavan, 63, Tagore Nagar, Allahabad 2, 2016.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UGH110001 | | | | | Title of the Paper Hindi-I | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 4 | 3 | 4 | 2 | 2 | 2 | 3 | 4 | 4 | 3.2 | |
| CO2 | 3 | 3 | 2 | 3 | 2 | 4 | 4 | 4 | 3 | 3 | 2 | 3.0 | |
| CO3 | 3 | 2 | 2 | 3 | 4 | 2 | 2 | 2 | 3 | 4 | 4 | 2.8 | |
| CO4 | 3 | 2 | 2 | 3 | 2 | 4 | 4 | 4 | 4 | 2 | 2 | 2.9 | |
| CO5 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3.2 | |
| CO6 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 2 | 4 | 3 | 3 | 3.4 | |
| | | | | | | | | | | Mean Overall Score | | 3.1 | |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semestre: I** **Heures /Semaine: 4**
**17UGF110001** **Points : 3**

## FRANÇAIS-I

**Course Outcomes**

* Introduire la langue et la culture française aux étudiants
* Comparer la culture de l'Inde et de la France
* Familiariser l'étudiant avec le vocabulaire
* la grammaire et les conversations se présenter
* Donner des informations en Français
* Conjuguer des verbes, Avoir Etre Aller Faire

**Unit-I : Al'aéroport Kamaraj domestic de Chennai** **(10 heures)**

Saluer, demander et dire le nom, présenter quelqu'un, se présenter, souhaiter la bienvenue a quelqu'un, demander et dire l'identité de quelqu'un.

**Grammaire :** Etre, s'appeler, pronoms sujets, interrogation

**Unit-II : A l'Université** **(10 heures)**

Demander comment on se porte, présenter quel qu'un, prendre congé, exprimer, l'appréciation.

**Grammaire :** Articles définis et indéfinis, genre des noms, adjectifs, présent de l'indicatif : verbes réguliers en er, être avoir, apprendre, prépositions a, en, au, aux.

**Unit-III : Au café** **(10 heures)**

Dire ce qu'on aime, donner des informations, exprimer l'admiration, demander des informations sur quelqu'un.

**Grammaire :** Adjectifs interrogatifs, présent de l'indicatif : avoir, verbes en er , savoir, qu'est ce que c'est?, adjectifs possessifs, négation ,adjectifs irréguliers

**Unit-IV : A la plage** **(15 heures)**

Proposer une sortie, accepter, refuser la proposition

**Grammaire :** phrases au singulier et au pluriel, pronom indéfini- on, il y a, adjectifs démonstratifs, négation, interrogation, présent de l'indicatif : faire, voir, aller, sortir, connaitre

**Unit-V : Un concert et chez Nalli** **(15 heures)**

Inviter, accepter, exprimer son incapacité d'accepter, complimenter, parlé au téléphone, demander le prix, protester contre le prix.

**Grammaire :** Présent de l'indicatif : verbes en er, venir, pouvoir, vouloir, articles contracte, avec, a chez, le futur, interrogation est ce que, adverbes

interrogatifs, adjectifs possessifs, accord de l'adjectif, adjectifs exclamatifs, très/trop, présent de l'indicatif : acheter-regarder, l'impératif.

**Manuel:**


1. K.Madanagobalane, **Synchronie-1**, Samhitâ Publication, 2011.


**Livre de référence:**


1. Annie Berthet /B_atrix Sampsonis/ Catherine Hugot /V_ronnique M Kizirian / Monique Waendendries, **Alter Ego A1**, Hachette, 2006.
2. Yves Loiseau/R_gineM_rieux, Connexions 1, Didier, 2011.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UGF110001 | | | | | Title of the Paper French-I | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 2 | 3 | 4 | 4 | 4 | 2 | 2 | 3 | 3 | | 3.2 |
| CO2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | | 3.2 |
| CO3 | 3 | 2 | 3 | 2 | 4 | 3 | 2 | 4 | 4 | 3 | 3 | | 3.0 |
| CO4 | 3 | 3 | 4 | 3 | 4 | 2 | 2 | 3 | 3 | 2 | 2 | | 2.8 |
| CO5 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 5 | 2 | | 3.4 |
| CO6 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 4 | 3 | | 3.1 |
| | | | | | | | | | Mean Overall Score | | | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester: I** **Hours/Week: 4**
**17UGS110001** **Credits : 3**

## SANSKRIT-I

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* Knowledge and understanding of basic Sanskrit grammar
* Knowledge and understanding of essential Sanskrit vocabulary
* Introduction of the writing skills
* Introduction of Sanskrit Aksharas.
* Introduction of Present tense forms
* Implementation of good thoughts from Subashitani

**Unit-I** **8 hours**

Akharavivaranam – Svaras & Vyanjanaani – Samyukta Aksharani.

**Unit-II** **12 hours**

Shabdadayah – Aakaaraanta, ikaar aantah. ukaaraantah.

Shabdadayah – Aakaaraanta, iikaar aantah. uukaaraantah.

**Unit-III** **12 hours**

Anuvaada Prayogah.

**Unit- IV** **14 hours**

Lat Lakarh – Parasmai – Pada Prayogah = Vakyarupah.

**Unit-V** **14 hours**

Subhaashitaani

**Books Recommended**


1. Kulapathy, K. M., Saral Sanskrit Balabodh, Bharathiya Vidya Bhavan, Munshimarg, Mumbai-400 007, 2014
2. R.S. Vadhyar & Sons, Book-Sellers and Publishers, Kalpathi, Palghat-678003, Kerala, SOuth India, Shabdha Manjari, 2014
3. Balasubramaniam R., Samskrita Akshara Siksha, Vangals Publication, 14th Main Road, JP Nagar, Bangalore -78, 2015.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UGS110001 | | | | | Title of the Paper Sanskrit-I | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | |
| CO1 | 5 | 3 | 5 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 3.1 |
| CO2 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 3.3 |
| CO3 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 3.1 |
| CO4 | 4 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 3.0 |
| CO5 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3.1 |
| CO6 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 3.1 |
| | | | | | | | | | Mean Overall Score | | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester: I** **Hours/Week: 5**
**17UGE120101** **Credits: 3**

## GENERAL ENGLISH-I

**Course Outcome**

* Introduce themselves to the others
* Narrate simple experiences in a coherent manner
* Understand the underlying meaning in the text
* Describe accurately what he/she observes and experiences
* Converse with friends about their likes and dislikes
* Write leave letters using the appropriate format and language

**Unit-I:**

01. Personal Details
02. Positive Qualities
03. Listening to Positive Qualities
04. Relating and Grading Qualities
05. My Ambition
06. Abilities and Skills
07. Self-Improvement Word Grid
08. What am I doing?
09. What was I doing?
10. Unscramble the Past Actions
11. What did I do yesterday?

**Unit-II:**

12. Body Parts
13. Actions and Body Parts
14. Value of Life
15. Describing Self
16. Home Word Grid
17. Unscramble Building Types
18. Plural Form of Naming Words
19. Irregular Plural Forms
20. Plural Naming Words Practice
21. Whose Words?

**Unit-III:**

22. Plural Forms of Action Words



23. Present Positive Actions
24. Present Negative Actions
25. Un/Countable Naming Words
26. Recognition of Vowel Sounds
27. Indefinite Articles
28. Un/Countable Practice
29. Listen and Match the Visual
30. Letter Spell - Check
31. Drafting Letter

**Non-Detailed:**

**"The Merchant of Venice" from *Six Tales From Shakespeare***

**Unit-IV:**

32. Friendship Word Grid
33. Friends' Details
34. Guess the Favourites
35. Guess Your Friend
36. Friends as Guests
37. Introducing Friends
38. What are We Doing?
39. What is (s)he / are they Doing?
40. Yes / No Question
41. What was s/he doing?
42. Names and Actions
43. True Friendship
44. Know your Friends
45. Giving Advice/Suggestions
46. Discussion on Friendship
47. My Best Friend

**Non-Detailed:**

**"The Taming of the Shrew" from *Six Tales From Shakespeare***

**Unit-V:**

48. Kinship Words
49. The Odd One Out
50. My Family Tree
51. Little Boy's Request

52. Occasions for Message
53. Words denoting Place
54. Words denoting Movement
55. Phrases for Giving Directions
56. Find the Destination
57. Giving Directions Practice
58. SMS Language
59. Converting SMS
60. Writing Short Messages
61. Sending SMS
62. The family debate
63. Family Today

**Non-Detailed**: **"The Tempest" from *Six Tales From Shakespeare***

**Textbook**


1. Joy, J.L. & Peter, F.M. *Let's Communicate 1*, New Delhi, Trinity Press, 2014. Print.


**Non-Detailed Text**


1. Dodd, E F. *Six Tales From Shakespeare*. London: Macmillan, 1987. Print. (First three tales)


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester 1 | Course Code 17UGE120101 | | | | | Title of the Paper General English-I | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3.80 |
| CO2 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4.10 |
| CO3 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 3.60 |
| CO4 | 4 | 3 | 2 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 3.80 |
| CO5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 5 | 5 | 3.90 |
| CO6 | 5 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 3.90 |
| | | | | | | | | | | | | | Mean Overall Score | 3.85 |

**Result: The Score for this Course is 3.85 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling*:**

$$\textbf{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \textbf{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester I** **Hours/Week: 7**
**17UST130201** **Credits: 4**

## DESCRIPTIVE STATISTICS

**Course Outcomes:**

1. Know the uses of statistics in society
2. Understand the method of data collection
3. Learn the types of statistical diagrams.
4. Applications of pie chart in news papers
5. Learn the Measures of central tendency
6. Analyse the Bivariate data in real life problems

**Unit-I: Collection and Scrutiny of Data**

Origin and meaning of statistics – general uses-relation with other disciplines-Limitations and misuses of statistics.

Methods of collection: Complete enumeration – Sample Survey - Primary data - Secondary data sources - Types of variables.

**Unit-II: Presentation of Data**

Presentation of data by tables and by diagrams- construction of tables (univariate and bivariate) - Classification – Types of classification - graphical representation of a frequency distribution by histogram and frequency polygon and Ogives.

Diagrammatic presentation: Line diagram, Bar diagrams: Simple, multiple, subdivided and percentage-Pie chart, comparative pie chart.

**Unit-III: Analysis of Data (Univariate)**

Measures of central tendency: Arithmetic mean-weighted mean-median-partition values-mode-geometric mean-Harmonic mean-choice of an average-characteristic of a good average.

Measures of dispersion: range-quartile deviation-mean deviation - standard deviation - relative measures of dispersion - Coefficient of variance-Lorenz curve. Measures of skewness and kurtosis.

**Unit-IV: Analysis of Data (Bivariate)**

Correlation: Scatter plot-coefficient of correlation-probable error-coefficient of determination-Spearmen's rank correlation coefficient-correlation coefficient for bivariate frequency table-correlation ratio-partial and multiple correlations (with respect to three variables only).

Association of attributes: Dichotomy-order of classes association and disassociation-methods: (I) comparison of observed and expected



frequencies (II) proportion method, (III) Yule's coefficient of association, (IV) coefficient of colligation.

**Unit – V: Analysis of Data (Fitting of Mathematical Models)**

Simple regression analysis: Distinction between regression analysis and correlation- Linear regression: Finding regression equations by Graphical method, method of least squares and using statistical constants(x.,y,$s_y$, $s_x$ and r ). Properties of linear regression coefficinets. Curvilinear regression: Fitting of second degree Parabola, exponential and power curves.

Note: Probability and Expectation concepts are to be avoided.

**TEXT BOOKS:**

1. Gupta,S.C. and Kapoor, V.K.: "Fundamentals of Mathematical Statistics", Sultan & Chand & SONS,New Delhi, 2011.

**REFERENCE BOOK:**

1) Saxena H .C.: Elementary Statistics. S. Chand & Co., 2009.

*Note*:

The qustion paper may consist of Theory and Problems in the ratio 50:50.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UST130201 | | | | | Title of the Paper DESCRIPTIVE STATISTICS | | | | | | | | Hours 7 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 3 | 5 | 4 | 3 | 5 | 2 | 4 | 4 | 4 | 4 | 3 | 5 | 3.92 | |
| CO2 | 5 | 4 | 4 | 4 | 3 | 5 | 5 | 4 | 4 | 5 | 4 | 2 | 4 | 4.08 | |
| CO3 | 5 | 5 | 4 | 4 | 1 | 4 | 5 | 4 | 5 | 5 | 3 | 1 | 4 | 3.85 | |
| CO4 | 5 | 5 | 4 | 5 | 3 | 5 | 5 | 4 | 5 | 4 | 5 | 3 | 5 | 4.46 | |
| CO5 | 4 | 5 | 3 | 4 | 3 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 4 | 3.92 | |
| CO6 | 4 | 4 | 5 | 4 | 2 | 4 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 4.08 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.05 |

**Result: The Score for this Course is 4.0 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester I** **Hours/Week: 4**
**17UST130202** **Credits: 2**

## COMPUTATIONAL STATISTICS-I

**Course Outcomes:**

1. Understand the univariate and bivariate data
2. Know the uses of statistical diagrams
3. compute the measures of central tendencies
4. Test the relationship between the variables using correlation coefficient
5. Know the use of Histogram
6. Obtain the role of rank correlation in some contests

**Unit – I**

Frequency Distributions – Univariate, Bivariate and cross-tabs.
Graphs: Histogram, Frequency polygon, Frequency curves, Ogives, Lorenz curve.
Diagrams: Cluster bar diagrams, Stacked bar diagrams, Pie chart, Pictograms, Scatter diagram.

**Unit – II**

Measures of Central Tendency: Mean, Median, Mode, Geometric mean, Harmonic mean, weighted mean, Partition values.
Measures of Dispersion: Range, Mean Deviation, Quartile Deviation, Standard Deviation, Combined Standard Deviation, Coefficient of Variation.

**Unit – III**

Skewness and Kurtosis: Raw moments, Central moments Karl Pearson's coefficient of skewness, Bowley's coefficient of skewness $b_1$, $b_2$, $i_1$, $i_2$.

**Unit – IV**

Correlation: Karl Pearson's correlation coefficient, Spearman's rank correlation coefficient, coefficient of determination.
Theory of attributes: Independence of attributes, consistency of data, Yule's coefficient of association and Yule's coefficient of colligation.

**Unit – V**

Regression analysis: Lines of regression, exponential curves, Power curves, Parabola.
Partial and multiple correlation coefficients with respect to three variables.

**Question Paper pattern:**

Answer all the questions. Either or type: 5 x 20 = 100

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UST130202 | | | | | Title of the Paper COMPUTATIONAL STATISTICS-I | | | | | | | | Hours 4 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 3 | 5 | 4 | 3 | 5 | 2 | 4 | 4 | 4 | 4 | 3 | 5 | 3.92 | |
| CO2 | 4 | 4 | 5 | 3 | 2 | 4 | 4 | 5 | 4 | 4 | 5 | 2 | 5 | 3.92 | |
| CO3 | 5 | 5 | 4 | 4 | 1 | 4 | 5 | 4 | 5 | 5 | 3 | 1 | 4 | 3.85 | |
| CO4 | 5 | 5 | 4 | 5 | 2 | 5 | 5 | 4 | 5 | 4 | 5 | 3 | 5 | 4.38 | |
| CO5 | 4 | 5 | 3 | 4 | 2 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 4 | 3.85 | |
| CO6 | 4 | 4 | 5 | 4 | 2 | 4 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 4.08 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.00 |

**Result: The Score for this Course is 4.0 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester I** **Hours/Week: 2**
**17UST130203** **Credits: 2**

## Computer Lab-I:
## OFFICE AUTOMATION

**Course Outcomes:**

1. Understand the Windows Operating system
2. Analyze the different version of Operating systems
3. Learn the basics of MS WORD
4. Understand the basic commands to create a folder
5. Know merging and deleting a file
6. Draw statistical diagrams using Excel function

**Exercises: Powerpoint**

1. Entering a letter, aligning, editing, spell check and printing.
2. Creating Tables, inserting rows and columns and formatting.
3. Creating main document, data source and using mail merge facility.
4. Entering Text in Cells of Excel worksheet and entering formulas.
5. Formatting Cells, Centering across selection and changing font and size.
6. Preparing Pie chart and Bar charts.
7. Creating a new presentation in Power Point, numbering and copying slides.
8. Changing fonts and colours, inserting Clip Art and Formatting options.
9. Inserting Bullets and Pictures, Creating Tables and Inserting Auto shapes.
10. Calculation of Statistical constants using Excel functions.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UST130203 | Title of the Paper Computer Lab-I: OFFICE AUTOMATION | | | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 4 | 5 | 4 | 5 | 2 | 4 | 4.15 |
| CO2 | 4 | 5 | 4 | 4 | 2 | 4 | 5 | 4 | 4 | 5 | 4 | 3 | 5 | 4.08 |
| CO3 | 5 | 4 | 5 | 5 | 3 | 5 | 4 | 5 | 4 | 5 | 4 | 2 | 5 | 4.31 |
| CO4 | 5 | 5 | 4 | 4 | 1 | 5 | 4 | 4 | 5 | 4 | 5 | 3 | 4 | 4.08 |
| CO5 | 5 | 4 | 4 | 5 | 2 | 5 | 5 | 5 | 5 | 4 | 4 | 2 | 4 | 4.15 |
| CO6 | 5 | 5 | 5 | 5 | 2 | 5 | 5 | 5 | 5 | 5 | 4 | 2 | 5 | 4.46 |
| | | | | | | | | | | | | | Mean Overall Score | **4.20** |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester I** **Hours/Week: 6**
**17UST130401** **Credits: 5**

## Allied:
## COMPUTERS IN STATISTICS-I
## (OFFICE AUTOMATION)

**Course Outcomes:**

1. Understand the Windows Operating system.
2. Analyze the different version of Operating systems.
3. Understand the basic commands to create a folder.
4. Know merging and deleting a file.
5. Draw statistical diagrams using Excel function.
6. Understand the Windows Operating system.
7. Know the data entry in the work sheet.
8. Understand the printing and data results.

**Unit-I: Windows OS**

Windows Explorer – My Computer - My Documents - Folder Creation – Creating, Copying, Editing and Deleting a File – Find and Replace Facility – Desktop Configuration – File Compression and extraction.

**Unit-II: MS Word - Basics**

Creating, saving, Previewing and Printing a Word document - Editing: cut,copy, paste, find, replace, undo, redo, and book working - Applying Basic formatting: changing font and font size – bold, italic and under line features - color selection – alignment – Bullet and Numbered Lists.

**Unit-III: MS Word - Working with Tables and Graph**

Adding a Table to your document – deleting, merging and splitting cells – Adding and deleting columns and rows. Inserting a Picture – clip Art, Shape and Smart Art – Designing and reviewing a word document – Headers and Footers – Page margins, page orientation, page breaks – Performing Spelling and grammar checks.

**Unit-IV: MS Excel Worksheet Basics & Statistical Applications**

Data Entry on the Worksheet – Built-in functions for good use – operations on Table – printing the data and results. Construction of Line charts, Bar charts, Pie charts and scatter diagrams, Summary Statistics (Measures of central Tendency, Variation, Skewness and kurtosis) – Correlation and Regression Analysis. Descriptive Statistics – Data Analysis PAK in Excel – Frequency Distribution, Histogram, Cross Tabulation and Pivot Tables

**Unit-V: MS Power Point**

Introduction to MS-Power point, presentations, slides, organization charts, graphs – working with slides, slide show and printing presentation.

**TEXT BOOKS**


1. Office 2010 in simple steps, Kogent solutions Team, Dream Tech., 2010 (chapters 1 to7)
2. Statistics made simple, K.V.S. Sharma, PHI, 2006 (chapters 4 to 7 and 9).
3. Peter Weverka: "Miscrosoft Office 2016 All-In-One for Dummies", John Wiley and Sons, 2016.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UST130401 | Allied: COMPUTERS IN STATISTICS-I (OFFICE AUTOMATION) | | | | | | | | | | | Hours 6 | Credits 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 4 | 5 | 4 | 2 | 5 | 4 | 4 | 5 | 4 | 5 | 2 | 4 | 4.08 |
| CO2 | 4 | 5 | 4 | 4 | 2 | 4 | 5 | 4 | 4 | 5 | 4 | 3 | 5 | 4.08 |
| CO3 | 5 | 5 | 4 | 4 | 2 | 5 | 4 | 4 | 5 | 4 | 5 | 3 | 4 | 4.15 |
| CO4 | 4 | 5 | 4 | 4 | 1 | 5 | 5 | 4 | 4 | 5 | 4 | 3 | 5 | 4.08 |
| CO5 | 5 | 4 | 4 | 5 | 2 | 5 | 5 | 5 | 5 | 4 | 4 | 2 | 4 | 4.15 |
| CO6 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 2 | 4 | 4.08 |
| CO7 | 5 | 5 | 4 | 4 | 2 | 5 | 4 | 5 | 5 | 4 | 3 | 5 | 4 | 4.23 |
| CO8 | 4 | 4 | 5 | 5 | 2 | 5 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 4.15 |
| | | | | | | | | | | | Mean Overall Score | | | 4.12 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester I** **Hours/Week:2**
**17UFC141001** **Credits: 2**

## ESSENTIALS OF HUMANITY

**Course Outcome**

1. To ensure creating awareness among the youth on human values.
2. To ensure educating the youth, the basic principles of value education.
3. To ensure the process of analyzing, appreciating and personalizing values as our own.
4. To ensure that students develop various dimensions of human personality.
5. To ensure the youth empowering the gender sensitization, gender differences and gender roles.
6. To ensure preparing the students for the smooth transfer from the stage of teenage to earlier adulthood.

**Unit-I**

**Principles of Value Education** - Introduction - Value Education- Characteristics of Values – Kinds of Values

**Unit-II**

**Development of Human Personality** - Personality traits - Theories of Personality - Discovering self- Defense mechanism - Power of positive thinking

**Unit-III**

**Dimensions of Human Development** - Physical development – Intellectual development - Emotional development - Social Development – Moral development - Spiritual development

**Unit-IV**

**Responsible Parenthood** - Human sexuality - Sex and love - Becoming a spouse - Responsible Parenthood

**Unit-V**

**Gender Equality and Empowerment -** Historical perspective - Education & economic development -Crimes against Women-Women's rights

**Text Book:**

**Essentials of Humanity**, Department of Foundation course, St.Joseph's College, Tiruchirappalli-2, 2016.



**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester I | Course Code 17UFC141001 | | | | | Title of the Paper ESSENTIALS OF HUMANITY | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 3 | 1 | 5 | 4 | 3 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 3 | 4.0 | |
| CO2 | 2 | 1 | 5 | 5 | 3 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 3 | 4.0 | |
| CO3 | 2 | 1 | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 3 | 4.1 | |
| CO4 | 2 | 2 | 5 | 4 | 2 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 4.0 | |
| CO5 | 5 | 2 | 5 | 5 | 2 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4.2 | |
| CO6 | 2 | 1 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 3 | 3.8 | |
| | | | | | | | | | | | | Mean Overall Score | | 4.0 | |

**Result: The Score for this Course is 4.0 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**பருவம்: 2** **மணி நேரம்: 4**

**17UGT210002** **புள்ளிகள்: 3**

## பொதுத்தமிழ்-II

**பாடத்தின் விளைவு**

- சமூக மாற்றச் சிந்தனைகளை உள்ளடக்கிய தற்கால இலக்கியப்பரப்பை அறிதல்
- பக்தி இலக்கியங்களின் வழி இறையியல் கோட்பாடுகளை அறிதல்
- உரைநடைக் கட்டுரை எழுதும் திறன் பெறுதல்- இலக்கணமரபுகளை அறிதல்
- பல்வேறு சமயங்களின் வாழ்வியல் கருத்துக்களை அறிந்து பின்பற்றுதல்
- காப்பியங்களில் உள்ள சமுதாயக் கருத்துக்களை அறிந்துகொள்ளுதல்.
- இதிகாசங்கள் உணர்த்தும் நீதிகளை அறியச்செய்தல்.
  அரசுப்போட்டித் தேர்வுகளுக்கேற்ப பொதுக்கட்டுரைகளும் மொழிப்பயிற்சியும் மாணவர்களுக்கு அளித்தல்.

**அலகு: 1** **(12 மணி நேரம்)**

சிலப்பதிகாரம் - அந்திமாலைச் சிறப்பு செய்காதை
இலக்கிய வரலாறு - சைவம் வளர்த்த தமிழ் முதல் புராணங்கள் முடிய.
இலக்கணம் - எழுத்திலக்கணம்

**அலகு: 2** **(12 மணி நேரம்)**

மணிமேகலை - உலக அறவி புக்க காதை
பெரியபுராணம் - தடுத்தாட்கொண்ட புராணம்

**அலகு: 3** **(12 மணி நேரம்)**

கம்பராமாயணம் - கும்பகர்ணன் வதைப்படலம்
உரைநடை - 7 முதல் 9 முடிய உள்ள கட்டுரைகள்

**அலகு: 4** **(12 மணி நேரம்)**

சீறாப்புராணம் - மானுக்குப் பிணை நின்ற படலம்
இலக்கணம் - சொல்லிலக்கணம்
இலக்கிய வரலாறு - தமிழ் இலக்கண நூல்கள் முதல் சிற்றிலக்கியங்கள் முடிய.

**அலகு: 5** **(12 மணி நேரம்)**

இரட்சணிய யாத்திரிகம் - மரணப்படலம்
உரைநடை - 10 முதல் 12 வரையிலான கட்டுரைகள்

**பாடநூல்:**


1. செய்யுள் திரட்டு, தமிழாய்வுத்துறை வெளியீடு, 2017-10
2. சமூகவியல் நோக்கில் தமிழ் இலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2
3. உரைநடை நூல் - தமிழாய்வுத்துறை வெளியீடு.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UGT210002 | | | | | | Title of the Paper பொதுத்தமிழ்-II | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 4 | 4 | 4 | | 5 | 5 | 5 | 4 | 4 | 2 | 4 | 4 | | 4.2 |
| CO2 | 4 | 5 | 5 | 4 | 5 | | 5 | 5 | 5 | 5 | 4 | 3 | 4 | 3 | | 4.4 |
| CO3 | 5 | 5 | 4 | 4 | 5 | | 5 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | | 4.3 |
| CO4 | 5 | 5 | 4 | 3 | 4 | | 5 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | | 4.1 |
| CO5 | 5 | 5 | 4 | 3 | 4 | | 5 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | | 4.1 |
| CO6 | 5 | 5 | 5 | 5 | 4 | | 5 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | | 4.1 |
| | | | | | | | | | | | | | | Mean Overall Score | | 4.2 |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semestre: II** **Hours/Week: 4**
**17UGH210002** **Credits : 3**

## HINDI-II

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

- their effective communicative skills in Hindi
- the introduction of socially relevant subjects in Modern Hindi Literature
- to appreciate the features of Modern Hindi one act plays and short stories
- the ability to fill in application forms Hindi
- use Hindi vocabulary and grammar patterns in a culturally proper ways.
- the ability to write about famous Hindi authors .

**Unit-I** **8 hours**

Paeeksha, Lekak Parichaya, Khani kee Basha – Shyli, Verb, Dhathu, Artha likiye ulte Shabda likiye.

**Unit- II** **12 hours**

Lekak Parichaya Ekanki kee, Basha Shyli, Ander Nagaree, Sankalan Traya, Pareek shaka Khani ke paatra, Kal, Vachya.

**Unit-III** **12 hours**

Chief Kee daavath, Ekanki ke Paatra, Ekankikaar, Ne ka Prayog, Adverb

**Unit- IV** **14 hours**

Do Kalakar, Bahoo kee Vidha, Kahaanikaar, Prepositions, conjunctions

**Unit-V** **14 hours**

Kahani ke paatra, Ekanke ke paatra, lekak parichaya, Interjunctions, Avikari Shabda

**Books Recommended**


1. Dakshina Bharath Hindi Prachara Sabha, Thiagaraya Nagar, Chennai - 600 017, Subodh Hindi Patamala-2, Ekanki, Hindi, 2016.
2. Ram Dev Hindi Bhavan, Vyakaran Pradeep, 63, Tagore Nagar, Alahabad, 2, 2013.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UGH210002 | | | | | Title of the Paper Hindi-II | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 4 | 3 | 4 | 3 | 2 | 3 | 4 | 4 | 4 | | 3.5 |
| CO2 | 3 | 3 | 2 | 3 | 2 | 4 | 4 | 3 | 3 | 2 | 2 | | 2.8 |
| CO3 | 3 | 2 | 2 | 3 | 4 | 2 | 4 | 4 | 2 | 3 | 4 | | 3.0 |
| CO4 | 3 | 2 | 2 | 3 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | | 3.0 |
| CO5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | | 3.1 |
| CO6 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 2 | | 3.3 |
| | | | | | | | | | | Mean Overall Score | | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semestre: II** **Heures /Semaine: 4**
**17UGF210002** **Points : 3**

## FRANÇAIS-II

**Course Outcomes:**

* Faire connaissance des journaux, des courriels, des lettres
* Comprendre les conversations téléphoniques.
* Décrire quelque chose
* Demander son chemin
* Parler des activités du week-end
* Accepter, refuser, exprimer la certitude.

**Unit-I: Nouvelles de L'inde** **(10 heures)**

Montrer son inquiétude, s'excuser, exprimer son appréciation, décrire quelqu'un, décrire quelque chose

**Grammaire:** Présent : verbes en er,-ir, le futur, interrogation totale, féminin d'autres adjectifs.

**Unit-II: A la gare Central station** **(10 heures)**

Réserver des billets, demander des renseignements, donner des renseignements

**Grammaire:** pronoms compléments d'objet direct, présent l'impératif :payer ,partir/sortir, l'impératif, expression du temps, construction avec infinitif

**Unit-III : Un lit dans la Cuisine** **(10 heures)**

Donner des ordres, localiser, bire qu'une proposition est stupide ou bizarre

**Grammaire :** Verbes en er-ranger, mettre impératif, il faut, devoir +infinitif, prépositions de lieu

**Unit-IV: Pierre apprend a conduire et mangez –vous correctement ?** **(15 heures)**

Rassurer, exprimer l'indirection exprimer l'autorisation, avertir, demander des informations sur les habitudes de quelqu'un, offrir a manger ou a boire, accepter, refuser, exprimer la certitude.

**Grammaire:** impératif-être, avoir, savoir, pronoms compléments d'objet indirect, le passe compose avec avoir expression de la quantité-articles partitifs, adverbes, pronoms directs et indirects, pronom en, présent des verbes –manger, boire ,offrir ,prendre, la condition avec si.



**Unit-V: Ils ont eu tort tous les deux !et Comment as-tu passe le weekend** **(10 heures)**

Demander son chemin, indiquer le cheminin a quelqu'un, reprocher / conseiller, parler des activités du week-end, demander a quelqu'un de se taire

**Grammaire:** le passe compose, adverbes mots interrogatifs, le passe compose avec être, faire du….pouvoir, vouloir.

**Manuel:**

1. K. Madanagobalane, **Synchronie -1**, Samhitâ publication, 2011.

**Livre de référence:**

1. Annie Berthet / B_atrix Sampsonis / Catherine Hugot / V_ronnique M kizirian / Monique Waendendries, **Alter Ego A1**, Hachette, 2006
2. Yves Loiseau / R_gine M-rieux, Connexions 1, Didier ,2011

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UGF210002 | | | | | Title of the Paper French-II | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 2 | 3 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | | 3.0 |
| CO2 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | | 2.8 |
| CO3 | 3 | 2 | 3 | 2 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | | 2.7 |
| CO4 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | | 3.2 |
| CO5 | 3 | 3 | 4 | 3 | 4 | 2 | 4 | 4 | 4 | 4 | 5 | | 3.6 |
| CO6 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | | 3.5 |
| | | | | | | | | | | | Mean Overall Score | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\textbf{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \textbf{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester: II** **Hours/Week: 4**
**17UGS210002** **Credits : 3**

## SANSKRIT-II

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* knowledge and understanding of basic Sanskrit grammar
* knowledge and understanding of essential Sanskrit vocabulary
* knowledge and understanding of the appropriateness of basic Sanskrit structures and expressions in a given context
* the ability to understand short passages in written Sanskrit on everyday topics
* the ability to produce short passages in written Sanskrit on everyday topics
* introduction of basic grammar (Avyaya Imperfect tense and Sandirules. Samasah.)

**Unit-I** **8 hours**

Visheshanaah
Saravanaama shabdas.

**Unit-II** **12 hours**

Sandhi Niyamaah Abhyaasah.(Guna, Visarga, Dirgha, Vrddhi)

**Unit-III** **12 hours**

Lang lakaarah. Kriyapadaani

**Unit-IV** **14 hours**

Gopala Vimshathi. (1-10) slokas.

**Unit-V** **14 hours**

Avyayas, Tatpurusha, Karma dhaaraya samaasah.

**Books Recommended**


1. Paundrapuram Ashram, Srirangam -620 006. Gopalavimshathi, 2014
2. R.S. Vadhyar & Sons, book – Sellers and Publishers, Kalpathi, Palghat-678 003, Kerala, Southe India, Shabdha Manjari, 2014
3. Kulapthy, K. M., Saral Sanskrit Balabodh, Bharathiya Vidya Bhavan, Munshimarg, Mumbai - 400007, 2014


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UGS210002 | | | | | Title of the Paper Sanskrit-II | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 5 | 3 | 5 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | | 3.2 |
| CO2 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | | 3.0 |
| CO3 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | | 3.0 |
| CO4 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | | 3.0 |
| CO5 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | | 3.2 |
| CO6 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | | 3.2 |
| | | | | | | | | | | | Mean Overall Score | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester: II** **Hours/Week: 5**
**17UGE220102** **Credits: 3**

## GENERAL ENGLISH-II

**Course Outcome**

* Ask open-ended questions in real-life situations
* Use polite expressions in appropriate ways
* Use correct punctuation marks and capital letters
* Use appropriate vocabulary
* Put ideas into a cohesive paragraph
* Develop positive self-esteem and thereby communicate effectively

**Unit-I**

01. Education Word Grid
02. Reading Problems and Solutions
03. Syllabification
04. Forms for Expressing Quality
05. Expressing Comparison
06. Monosyllabic Comparison
07. Di/polysyllabic Comparison
08. The best monosyllablic Comparison
09. The best di/polysyllabic Comparison
10. Practising Quality Words

**Non-Detailed:**

**"Julius Caesar" from *Six Tales From Shakespeare***

**Unit –II:**

11. Wh Words
12. Yes/No Recollection
13. Unscramble Wh Questions
14. Wh Practice
15. Education and the Poor
16. Controlled Role play
17. Debate on Education
18. Education in the Future
19. Entertainment Word Grid
20. Classify Entertainment Wordlist
21. Guess the Missing Letter

22. Proverb-Visual Description
23. Supply Wh Words
24. Rearrange Questions
25. Information Gap Questions

**Unit-III:**

26. Asking Questions
27. More about Actions
28. More about Actions and Uses
29. Crime Puzzle
30. Possessive Quiz
31. Humourous News Report
32. Debate on Media and Politics
33. Best Entertainment Source

**Unit-IV:**

34. Career Word Grid
35. Job-Related Wordlist
36. Who's Who?
37. People at Work
38. Humour at Workplace
39. Profession in Context
40. Functions and Expressions
41. Transition Fill-in
42. Transition Sord Selection
43. Professional Qualities
44. Job Procedures
45. Preparing a Resume
46. Interview Questions
47. Job Cover Letter Format
49. E-mailing an Application
50. Mock Interview

**Non-Detailed:**

**"King Lear" from *Six Tales From Shakespeare***

**Unit-V:**

51. Society Word Grid
52. Classify Society Wordlist



53. Rearrange the Story
54. Storytelling
55. Story Cluster
56. Words Denoting Time
57. Expressing Time
58. What Can You Buy?
59. Noise Pollution
60. Positive News Headlines
61. Negative News Headlines
62. Matching Conditions
63. What Whould You Do?
64. If I were the Prime Minister
65. My Dream Country

**Non-Detailed: "Macbeth" from *Six Tales From Shakespeare***

**Textbook**

1. Joy, J.L. & Peter, F.M. *Let's Communicate 2*, New Delhi: Trinity Press, 2014. Print.

**Non-Detailed Text**

1. Dodd, E F. *Six Tales From Shakespeare*. London: Macmillan, 1987. Print. (Last three tales)

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UGE120102 | | | | Title of the Paper General English-II | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3.9 |
| CO2 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 4.0 |
| CO3 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 3.6 |
| CO4 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 3.8 |
| CO5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 5 | 5 | 3.9 |
| CO6 | 5 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 3.9 |
| | | | | | | | | | | | | | Mean Overall Score | 3.8 |

**Result: The Score for this Course is 3.8 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester II** **Hours/Week: 7**
**17UST230204** **Credits: 5**

## PROBABILITY THEORY

**Course Outcomes:**

1. Conduct random experiments in real life data.
2. Understand the Axioms of probability.
3. Create the Joint probability density function.
4. Obtain the cumulant generating functions and its properties.
5. Compute the skewness and Kurtosis.
6. Compute the probability values for sum random variables using central limit theorem.
7. Understand how to get density from joint density.
8. Understand the applications of central limit theorem.

**Unit-I**

Random experiment sample point, sample space, algebra of events, Operation on events, classical and relative frequency approach to probability-discrete probability space, axiomatic approach to probability.

**Unit-II**

Addition theorem of probability - Conditional probability-independence of events-multiplication theorem-Baye's theorem and its application.

**Unit-III**

Definition of discrete and continuous random variables - probability mass function, probability density functions, distribution function and their properties. Expectation of random variables and its properties. Joint distribution of two random variables, marginal and conditional distributions. Independence of random variables. Covariance, Correlation.

**Unit-IV**

Moment generating functions - Characteristic functions – Inversion and Uniqueness theorems. (Statement only) cumulant generating functions and its properties. Moments, measures of central tendency, dispersion, skewness and kurtosis.

**Unit-V**

Chebyshev's Inequality and applications-Markov inequality-Concept of convergence in probability - Weak law of large numbers- Central limit theorems (De-Moivre and Levy-Lindeberg Levy theorem).

**Textbooks:**


1. Gupta,S.C. and Kapoor, V.K. : "Fundamentals of Mathematical Statistics", Sultan & Chand & SONS,New Delhi, 11th Ed, 2002


**Reference Books:**


1. Dudewicz, E.J. and Mishra, S.N. Introduction to Mathematical Statistics, John Wiley, 1988
2. Hogg, R.V. and Craig, A.T.: Introduction to Mathematical Statistics, Prentice Hall, England, 7th Ed, 2013.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UST230204 | | | | | Title of the Paper PROBABILITY THEORY | | | | | | | | Hours 7 | Credits 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 5 | 3 | 3 | 4 | | 4.00 |
| CO2 | 5 | 5 | 4 | 5 | 3 | 5 | 5 | 4 | 4 | 4 | 3 | 2 | 4 | | 4.08 |
| CO3 | 4 | 5 | 4 | 5 | 2 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 5 | | 4.15 |
| CO4 | 5 | 4 | 4 | 5 | 2 | 4 | 4 | 5 | 4 | 5 | 3 | 2 | 4 | | 3.92 |
| CO5 | 4 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 5 | 5 | 4 | 3 | 5 | | 4.38 |
| CO6 | 5 | 5 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | | 4.00 |
| CO7 | 3 | 4 | 5 | 5 | 3 | 5 | 4 | 4 | 4 | 5 | 5 | 3 | 3 | | 4.08 |
| CO8 | 4 | 4 | 5 | 3 | 1 | 4 | 4 | 3 | 5 | 4 | 3 | 5 | 4 | | 3.77 |
| | | | | | | | | | | | Mean Overall Score | | | | 4.04 |

**Result: The Score for this Course is 4.0 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester II** **Hours/Week: 2**
**17UST230205** **Credits: 2**

## COMPUTATIONAL STATISTICS-II

**Course Outcomes:**

1. Conducting the random experiments for large sample space.
2. Find the inverse probability using Baye's theorem.
3. Understand the weak law of large numbers.
4. Understand the meaning of random variables.
5. Obtain the characteristic functions of both the random variables.
6. Understand the functions of joint distribution.

**Unit – I**

Problems under the following: Random experiment sample point, sample space, algebra of events, Operation on events, classical and relative frequency approach to probability-discrete probability space, axiomatic approach to probability.

**Unit – II**

Problems under the following: Addition theorem of probability - Conditional probability-independence of events-multiplication theorem-Baye's theorem.

**Unit – III**

Problems under the following: Discrete and continuous random variables - probability mass function, probability density functions, distribution function. Expectation of random variables. Measures of central tendency, dispersion, skewness and kurtosis.

**Unit – IV**

Problems under the following: Joint distribution of two random variables, marginal and conditional distributions. Independence of random variables. Covariance, Correlation.

**Unit – V**

Problems under the following: Moment generating functions - Characteristic functions – Chebyshev's Inequality and applications – Weak law of large numbers.

**Question Paper pattern:**

Answer all the questions. Either or type: 5 x 20 = 100



**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UST230205 | | | | | Title of the Paper COMPUTATIONAL STATISTICS-II | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 5 | 4 | 3 | 1 | 4 | | 3.92 |
| CO2 | 4 | 5 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 5 | 3 | 2 | 5 | | 4.00 |
| CO3 | 5 | 4 | 5 | 5 | 1 | 4 | 4 | 4 | 5 | 4 | 2 | 1 | 4 | | 3.69 |
| CO4 | 3 | 4 | 5 | 5 | 3 | 5 | 4 | 3 | 5 | 4 | 3 | 5 | 4 | | 4.08 |
| CO5 | 3 | 4 | 5 | 3 | 3 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | | 4.08 |
| CO6 | 3 | 5 | 4 | 5 | 3 | 5 | 4 | 5 | 4 | 5 | 3 | 5 | 4 | | 4.23 |
| | | | | | | | | | | | Mean Overall Score | | | | 4.05 |

**Result: The Score for this Course is 4.0 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester II** **Hours/Week: 2**
**17UST230206** **Credits: 1**

## Computer Lab-II:
## 'C' PROGRAMMING

**Course Outcomes:**

1. Analyze the big data using c programming.
2. Compute the mean and variance using C program.
3. Create and update sequential and random file.
4. Understand the Pointer expressions.
5. Learn the statements of C language.
6. Understand the importance of functions.

**List of Exercises**

1. Use of GETC, PUTC, GETS and PUTS statements.
2. Use of SCANF and PRINTF statements.
3. Calculation of mean and variance.
4. Squeezing a given character string (Elimination of all white charaters).
5. Writing a character string in reverse order.
6. Computation of correlation and Regression Coefficients.
7. A problem involving Recursion or Palindrome.
8. A problem involving Pointers and Functions.
9. Creation and updating of a sequential file
10. Creation and updating of a random file

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UST230206 | | | | | Title of the Paper COMPUTER LAB-II: 'C' PROGRAMMING | | | | | | | Hours 2 | Credits 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 4 | 4 | 5 | 5 | 2 | 5 | 4.31 |
| CO2 | 5 | 5 | 4 | 5 | 3 | 5 | 5 | 4 | 5 | 4 | 4 | 2 | 5 | 4.31 |
| CO3 | 4 | 4 | 4 | 4 | 1 | 4 | 4 | 4 | 5 | 4 | 5 | 2 | 4 | 3.77 |
| CO4 | 5 | 4 | 5 | 4 | 2 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4.23 |
| CO5 | 5 | 4 | 4 | 4 | 2 | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 3 | 3.92 |
| CO6 | 4 | 4 | 5 | 5 | 2 | 5 | 4 | 4 | 4 | 5 | 3 | 5 | 3 | 4.08 |
| | | | | | | | | | | | Mean Overall Score | | | 4.10 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\textbf{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \textbf{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester II** **Hours/Week: 6**
**17UST230402** **Credits: 5**

**Allied:**

**COMPUTERS IN STATISTICS-II ('C' PROGRAMMING)**

**Course Outcomes:**

1. Understand Fundamentals of C constants.
2. Learn the control statements.
3. Know the control statements.
4. Compute the pointer arithmetic.
5. Creating , processing and updating files.
6. Understand the importance of functions.
7. Creation of file processing
8. Understand the importance of functions

**Unit-I: Intoductory concepts**

Introduction to C- Fundamentals of C- Constants, Variables, Declarations- Expressions- Special Arithmetic operators- Conversions- Library routines- Execution of C programs in UNIX Environment.

**Unit-II: Simple and Control Statements**

Simple statements- GETC, PUTC, GETS, PUTS, SCANF, PRINTF and assignment statements – Illustrations.

Control statements- IF statements, SWITCH statements, GOTO statement- FOR,WHILE, DO WHILE statements – Problems.

**Unit-III: Functions and Arrays**

Functions- Importance of Functions in C – Declaration – Usage-Argument passing methods-Storage classes.

Arrays-Declarations-Dimensions-Usage-Arrays with Functions-Applications.

**Unit-IV: Pointers, Structures and Unions**

Pointers-Importance-Declaration-Pointer Arithmetic-Pointer Expression-Passing of Pointers- Pointers with Arrays-Pointers to Pointers.

**Unit-V: File Processing**

File Processing(Sequential and Random)- File organizations-Accessing methods-File processing statements-Simple Applications- Creation, Processing and Updating of files.



**TEXT BOOKS:**

1. Balagurusamy, E.: Programming in ANSI C, Tata McGraw – Hill publishing Company Ltd., 7th ed., 2016.
2. Byron S Gottfried, Theory and problems of programming with C, SCHAUM Out line Seires, International Editions. 3rd ed, 2017

**REFERENCE BOOKS:**

1. Herbert Schildt, Osborn: C made Simple, McGraw Hil Publications
2. Kernighan and Ritchie: C Programming Language, Prentice Hall of India Pvt. Ltd, 2000.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UST230402 | Allied: COMPUTERS IN STATISTICS-II: 'C' PROGRAMMING | | | | | | | | | | Hours 6 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 4 | 3 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 5 | 2 | 5 | 4.08 |
| CO2 | 5 | 5 | 4 | 3 | 2 | 5 | 5 | 4 | 4 | 4 | 5 | 2 | 4 | 4.00 |
| CO3 | 4 | 4 | 5 | 4 | 2 | 4 | 5 | 4 | 5 | 4 | 3 | 1 | 5 | 3.85 |
| CO4 | 5 | 5 | 5 | 5 | 3 | 4 | 5 | 4 | 5 | 4 | 4 | 1 | 4 | 4.15 |
| CO5 | 5 | 5 | 4 | 4 | 1 | 5 | 5 | 4 | 5 | 5 | 5 | 2 | 5 | 4.23 |
| CO6 | 3 | 3 | 4 | 5 | 3 | 4 | 4 | 4 | 5 | 5 | 3 | 5 | 4 | 4.00 |
| CO7 | 5 | 5 | 4 | 4 | 2 | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 3 | 4.00 |
| CO8 | 4 | 4 | 5 | 5 | 2 | 5 | 4 | 4 | 4 | 5 | 3 | 5 | 3 | 4.08 |
| | | | | | | | | | | | | Mean Overall Score | | **4.05** |

**Result: The Score for this Course is 4.0 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester II** **Hours/Week: 2**
**17UCE240802A** **Credit: 2**

## COMPUTER LITERACY

**Course Outcomes**

1. Understand the basics of Computer Systems
2. Familiar with the applications of MS-Office / HTML & CSS
3. Know the statistical data analysis using R
4. Aware the latest trends and technologies such as Mobile Computing, Big Data and Analytics, Cloud Computing.
5. Understand the concepts of social networking sites.
6. Knowledge in Cyber Crime and Cyber Ethics.

**Unit-I: Computer System**

Computer - An Introduction - Hardware Components - Input and Output Technologies - Computer Hierarchy- Software Fundamentals - Systems Software and Os- Application Software- Software Licensing - Open Systems- Open Source Software- Programming Languages- Information Systems- General It Trends.

**Unit-II: (For Non-CS)**

**Microsoft Word**: Introduction - Word Environment - Opening and Creating a New Document - Saving Documents - Proofing Features - Printing a Document - Formatting Text - Working with Shapes and Lists - Line and Paragraph Spacing- Working with Tables - Columns and Ordering- Working with Pictures- Working with Headers and Footers - Using Indents and Tabs - Using Mail Merge.

**Microsoft Excel**: Introduction - Document Creation - Renaming a worksheet - Office user interface - Open a New Workbook - Columns, Rows, and Cells - Selecting a cell - - Basic data entry, fill handle - - Insert columns - Arithmetic Calculations & Formulas - Excel Formulas- Calculate with Functions - Function Library - Graphs and Charts - Printing the Document.

**Microsoft Powerpoint**: Starting PowerPoint - Working with Slides - Applying Theme - Animation- Transitions – Views.

**Unit-II: (For CS)**

**HTML:** Introduction - HTML generations – HTML Tags – Headings – Paragraphs – Comments – Line Breaks – Formatting Tags – Hyperlinks – Images – Lists – Tables – Frames – Forms.

**CSS:** Introduction – Use of External Style Sheet – Defining Styles – Use Relative Sizing – Use Numbered Value for Color.

**Unit-III: Statistical Data Analysis**

Introduction - R Programming Language - Basic R Commands - Univariate and Bivariate Statistical Measures - Graphic Representation of Statistical Data - Lab Exercise.

**Unit-IV: SMAC**

Introduction - Understanding the Enterprise of Tomorrow - Social Networking - Mobile Computing - Big Data and Analytics - Cloud Computing

**Unit-V: Cyber Crime**

Definition - List of Cyber Crimes - Cyber Ethics- Unethical Behaviour - Securing information privacy and confidentiality - Internet Ethics - Indian Information Technology Act - Advantages of Cyber Laws - National e-Governance Plan (NeGP) - eCommerce - Electronic Fund Transfer (EFT)

**Book for Study**


1. Department of Foundation Course, "Computer Literacy", St. Joseph's College, 2017.


**Books for Reference**


1. Alexis Leon, "Introduction to computers", Vikas Publishing House Pvt. Ltd., New Delhi, 2008.
2. Alexis Leon and Mathew Leon, "Introduction to computers with Ms Office 2000", Tata McGraw Hill Publishing Co. Ltd., New Delhi, 2005.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UCE240802A | | | | | Title of the Paper COMPUTER LITERACY | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4.15 |
| CO2 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4.08 |
| CO3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3.77 |
| CO4 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4.15 |
| CO5 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4.15 |
| CO6 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4.31 |
| | | | | | | | | | | | | | Mean Overall Score | 4.10 |

**Result: The Score for this Course is 4.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester II** **Hours/Week: 2**
**17UFC241002** **Credits: 2**

## FUNDAMENTALS OF HUMAN RIGHTS

**Course Outcome**

1. To ensure acquiring the knowledge about the historical background of human rights.
2. To ensure sensitizing the young the values of human rights.
3. To ensure the importance of human rights in the Indian context.
4. To ensure learning the fundamental duties in the constitution of India.
5. To ensure educating the youth in respecting and protecting the rights of every other human being.
6. To ensure teaching the youth on the vulnerabilities of women and children.

**Unit-I**

Introduction, Classification of Human Rights, Scope of Human Rights, Characteristics of Human Rights, and Challenges for Human Rights in the 21st Century.

**Unit-II**

Human Rights in Pre-World War Era, Human Rights in Post-World War Era, Evolution of International Human Rights Law - the General Assembly Proclamation, Institution Building, Implementation and the Post Cold War Period. The ICC.

**Unit-III**

Introduction, Classification of Fundamental Rights, Salient Features of Fundamental Rights, and Fundamental Duties

**Unit-IV**

Women's Human Rights, Issues related to women's rights, and Rights of Women's and Children

**Unit-V**

Human Rights Violations, Human Rights Violations in India - the Human Rights Watch Report, January 2012, Human Rights Organizations.

**Text Book:**

1. **Techniques of social Analysis: Fundamentals of Human Rights,** Department of Foundation course, St.Joseph's College, Tiruchirappalli, 2015.



**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester II | Course Code 17UFC241002 | | | | | Title of the Paper FUNDAMENTALS OF HUMAN RIGHTS | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 1 | 5 | 5 | 2 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 4.2 | |
| CO2 | 4 | 1 | 5 | 4 | 2 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4.0 | |
| CO3 | 5 | 1 | 5 | 5 | 2 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4.2 | |
| CO4 | 4 | 1 | 5 | 5 | 2 | 2 | 4 | 3 | 5 | 5 | 4 | 4 | 5 | 3.8 | |
| CO5 | 5 | 1 | 5 | 4 | 1 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4.1 | |
| CO6 | 3 | 1 | 5 | 4 | 1 | 4 | 3 | 5 | 5 | 3 | 4 | 4 | 5 | 3.6 | |
| | | | | | | | | | | | | | Mean Overall Score | 3.9 | |

**Result: The Score for this Course is 3.9 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**பருவம்: 3** **மணி நேரம்: 4**

**17UGT310003** **புள்ளிகள்: 3**

## பொதுத்தமிழ்-III

**பாடத்தின் விளைவு**

- செம்மொழியாம் தமிழ் மொழியின் சிறப்பை அறிதல்.
- பண்டை இலக்கியங்கள் உணர்த்தும் அறக்கருத்துகளை அறிதல்
- புதினம் வாயிலாகத் தற்காலச் சமுதாயச் சிக்கல்களையும், அதற்கான தீர்வுகளையும் ஆராயும் திறன் பெறுதல்
- மானுட வாழ்வில் அகம், புறம் பற்றிய பாகுபாட்டை தமிழ்ச்செய்யுள் வாயிலாக அறிதல்.
- தமிழர்களின் ஈகையும் வீரமும் எடுத்துரைக்கும் புறச்செய்திகளை அறிதல்
- நீதிநூல்கள் மனித வாழ்வை செம்மைப்படுத்தும் பாங்கினை உணர்த்துதல்.

**அலகு: 1** **(12 மணி நேரம்)**

நெடுநல்வாடை (முழுமையும்)

**அலகு: 2** **(12 மணி நேரம்)**

குறுந்தொகை - பாடல்கள் - (32, 323, 305, 290, 168)
யாப்பிலக்கணம் (வெண்பா, ஆசிரியப்பா)

**அலகு: 3** **(12 மணி நேரம்)**

கலித்தொகை - பாடல்கள் - (குறிஞ்சிக்கலி-15, பாலைக்கலி-9, மருதக்கலி-15, நெய்தற்கலி-22, முல்லைக்கலி-07)
இலக்கிய வரலாறு - முதற்பாகம் ('தமிழ் மொழியின் தொன்மையும சிறப்பும' முதல் 'சங்க தொகை நூல்கள்' முடிய) புதினம்.

**அலகு: 4** **(12 மணி நேரம்)**

பதிற்றுப்பத்து - பாடல்கள் (12, 24,)
புறநானூறு - பாடல்கள் (46, 86, 122, 214, 246)
அணியிலக்கணம்

**அலகு: 5** **(12 மணி நேரம்)**

திருக்குறள் - ஈகை, ஆள்வினை உடைமை, நிறை அழிதல் ஆகிய அதிகாரங்கள்
நாலடியார் - இளமை நிலையாமை(11), பிறன்மனை நயவாமை(82), பெருமை(185), அறிவின்மை(254), காமநுதலியல்.(391).
இலக்கிய வரலாறு - சங்க இலக்கியங்களின் தனித்தன்மைகள் முதல் இரட்டைக் காப்பியங்கள் முடிய

**பாடநூல்கள்:**


1. செய்யுள் திரட்டு, தமிழாய்வுத் துறை வெளியீடு (2017-2020).
2. சமூகவியல் நோக்கில் தமிழிலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, 2014.
3. புதினம் (ஒவ்வொரு கல்வியாண்டும் ஒவ்வொரு புதினம்). காணாமல் போன கவிதை (2017-18).




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UGT310003 | | | | | Title of the Paper பொதுத்தமிழ்-III | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4.6 | |
| CO2 | 5 | 5 | 4 | 3 | 4 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4.4 | |
| CO3 | 5 | 5 | 5 | 3 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 5 | 4.5 | |
| CO4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4.8 | |
| CO5 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 5 | 4.3 | |
| CO6 | 5 | 5 | 5 | 3 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 5 | 4.5 | |
| | | | | | | | | | | | | Mean Overall Score | | **4.5** | |

**Result: The Score for this Course is 4.5 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semestre: III** **Hours/Week: 4**

**17UGH310003** **Credits: 3**

## HINDI-III

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* the ability to enable the students to complete the pre-reading task to comprehend the local and global issues in the lessons.
* the ability to enable the students to complete the post-reading task centering on Grammar and Skill Development.
* the relevance of Bhakthi Movement in Hindi Literature.
* the ability to imagine and write poems.
* the ability to quote poetry in Speeches.
* the ability to write friendly and formal letters.

**Unit-I** **8 hours**

Tera Sneh Na Kho oon, Kavi Parichaya, Patra Likne ke Kaaran, Patra Kee Avashyakatha, Sandhi keeiye, Vigrah Keejiye

**Unit-II** **12 hours**

Ek boondh, Tera Sneh Na Kho oon kavitha kee manovygnaik stiti, Chutti Patra, Sandhi

**Unit-III** **12 hours**

Ekloondh Kavitha Ka Uddeshya, Kabir Ke Dohe, Nagar Palika ko Patra, Samas

**Unit-IV** **14 hours**

Vimal Indu Kee Vishal Kiranen, Rahim Ke Dohe, Naukari Keliye Avedan Patra, Upasarga

**Unit-V** **14 hours**

Thulasi ke Dohe, Kitab Maangne Keliye Patra, Pratyaya, Kaviparichaya

**Books Recommended**


1. Dakshina Bharath Hindi Prachara Sabha, Thiagaraya Nagar, Subodh Hindi, Paatamala-3, Chennai-600 017, Hindi, 2016.
2. DBHP Sabha, T.Nagar, Chennai-600 017, Abihav Patralekhan, 2016
3. Ram Dev, Vyakaran Pradeep, Hindi Bhavan, 63 Tagore Nagar, Alahabad 2, 2016.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UGH310003 | | | | | Title of the Paper Hindi-III | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | | 3.6 |
| CO2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 5 | 3 | 5 | | 3.0 |
| CO3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | | 3.2 |
| CO4 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | | 2.9 |
| CO5 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | | 3.2 |
| CO6 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | 3.3 |
| | | | | | | | | | Mean Overall Score | | | | 3.2 |

**Result: The Score for this Course is 3.2 (High Relationship)**

*Note:*

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

*Values Scaling:*

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semestre: III** **Heures /Semaine: 4**
**17UGF310003** **Points : 3**

## FRANÇAIS-III

**Course Outcomes**

* Comparer la culture de l'Inde et de la France
* Familiariser l'étudiant avec le vocabulaire, la grammaire et les conversations
* Connaître des journaux, des courriels, des lettres
* Parler des projets de vacances
* Exprimer l'étonnement
* Parler de ses projets d'avenir, exprimer l'opposition.

**Unit-I: Un entretien et Au restaurant (10 heures)**

Demander des informations personnelles à quelqu'un, donner des informations, répondre à une proposition. Réserver une table, demander la carte, commander, apprécier les plats, demander l'addition.

**Grammaire:** Imparfait, Imparfait et passé composé, expression du temps, expression de la conséquence.Le futur, présent des verbes peser, rejoindre, le passé récent, le présent progressif, le futur proche, Restriction-ne…que, moi aussi…

**Unit-II : Enfin les vacances ! et Un autre institut (10 heures)**

Raconter son emploi du temps quotidien, parler des projets de vacances, exprimer l'étonnement. Rassurer/consoler, s'indigner

**Grammaire:** Verbes pronominaux, pronom y, quelqu'un/ne…personne, quelque chose/ne…rien, ne…jamais, Déjà/ne…pas encore, chacun, adjectifs indéfinis.Pronoms relatifs, impératif, indicateurs de temps : de…a, a partir de….jusqu'a, depuis, pendant.

**Unit-III : Un Indien célèbre visite la France et Qui dépense plus? (10 heures)**

Demander des informations sur quelqu'un, demander une opinion, donner son opinion. Dire à quelqu'un d'être prudent, faire des reproches à quelqu'un, se justifier.

**Grammaire:** Pronoms relatifs composés, pronoms compléments d'objet directs et indirectes, opposition savoir/Connaitre, connecteurs chronologiques, nombre ordinaux.Le comparatif, c'est+ nom+ qui, il reste, encore, il y a, souvent.

**Unit-IV: Penser à son avenir - (15 heures)**

Parler de ses projets d'avenir, exprimer l'opposition.



**Grammaire :** Style direct/indirect, proposition introduite par que, mots d'enchaînement – donc, pourtant.

**Unit-V: L'astrologie (15 heures)**

Exprimer des conditions, dire quelque chose n'a pas d'importance, proposer quelque chose.

**Grammaire:** Le conditionnel – la condition.

**Manuel:**

1. K.Madanagobalane, **Synchronie-II**, Samhitâ Publication, 2011.

**Livre de référence :**

1. Annie Berthet /B_atrix Sampsonis/ Catherine Hugot /V_ronnique M Kizirian / Monique Waendendries, **Alter Ego A1**, Hachette, 2006.
2. Yves Loiseau/R_gineM_rieux, Connexions 1, Didier, 2011.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UGF310003 | | | | | Title of the Paper French-III | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 2 | 3 | 4 | 4 | 2 | 3 | 3 | 2 | 2 | | 3.0 |
| CO2 | 3 | 3 | 3 | 3 | 4 | 4 | 2 | 3 | 4 | 2 | 3 | | 3.1 |
| CO3 | 3 | 2 | 3 | 2 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | | 3.0 |
| CO4 | 3 | 3 | 4 | 3 | 4 | 2 | 3 | 3 | 3 | 4 | 4 | | 3.3 |
| CO5 | 3 | 3 | 4 | 3 | 4 | 2 | 3 | 3 | 4 | 4 | 4 | | 3.4 |
| CO6 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | | 3.4 |
| | | | | | | | | | | | Mean Overall Score | | 3.2 |

**Result: The Score for this Course is 3.2 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester: III** **Hours/Week: 4**
**17UGS310001** **Credits : 3**

## SANSKRIT-III

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* Knowledge and understanding of essential Sanskrit vocabulary in a given topic
* Knowledge and understanding of the appropriateness of basic Sanskrit structures in Slokas
* Knowledge of the basic Sanskrit poetry.
* An idea on Epics and Puranas.
* The usage of – Upasargas.
* The familiarization the history of Sankrit literature Vedas – Puranas and Natakas.

**Unit-I** **8 hours**

Romodantam. Balakandam. 1-15

**Unit-II** **12 hours**

Romodantam. Balakandam. 15-30

**Unit-III** **12 hours**

Vedas – Vedangas. vivaranam.

**Unit-IV** **14 hours**

Puranas. Upanishads.

**Unit-V** **14 hours**

Upasargas. Bhavishyat Kaalah

**Books recommended:**


1. Parameshwara, Ramodantam, LIFCO, Chaennai, 2015.
2. R.S. Vadhyar & Sons, Book-Sellers and Publishers, Kalpathi, Palghat-678003, Kerala, South India, History of Sanskrit Literature, 2015.
3. Kulapathy, K.M., Saral Sanskrit Balabodh, Bharathiya Vidya Bhavan, Munshimarg, Mumbai-400 007, 2015.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UGS310003 | | | | | Title of the Paper Sanskrit-III | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 5 | 3 | 5 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | | 3.1 |
| CO2 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | | 3.1 |
| CO3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | | 3.1 |
| CO4 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | | 3.1 |
| CO5 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | | 3.1 |
| CO6 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | | 3.1 |
| | | | | | | | | | | Mean Overall Score | | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester: III** **Hours/Week: 5**

**17UGE320103** **Credits: 3**

## GENERAL ENGLISH-III

### Course Outcome

* Comprehend the local and global issues through the lessons
* Do the tasks centering on skill development and enhance their Grammar Using and Writing Skills
* Use interactive skills
* Train and develop the Listening and Reading Skills of the learners through teacher-led reading practice
* Enhance their Listening, Reading, Speaking, and Writing Skills
* Develop their Creative and Critical Thinking and Speaking Skills

### Unit-I: *Suggestions to Develop Your Reading Habit

1.0 Introduction
1.1 Objectives
1.2 Listening and Reading Skills through Teacher-led Reading Practice
1.3 Glossary
1.3.1 Words
1.3.2 Phrases
1.4 Reading Comprehension
1.5 Critical Analysis
1.6 Creative Task
1.7 General Writing Skill: Letter Writing: Informal
1.8 Grammar: Simple Present Tense
1.9 **Non-Detailed Text:** Dickens, Charles. *Hard Times.*

### Unit-II: *The Secret of Success: An Anecdote

2.0 Introduction
2.1 Objectives
2.2 Listening and Reading Skills through Teacher-led Reading Practice
2.3 Glossary
2.3.1 Words
2.3.2 Phrases
2.4 Reading Comprehension
2.5 Critical Analysis
2.6 Creative Task
2.7 General Writing Skills: Letter Writing: Formal

2.8 Grammar: Present Continuous Tense
2.9 **Non-Detailed Text:** Dickens, Charles. *Hard Times.*

**Unit-III**: ***The Impact of Liquor Consumption on the Society**
3.0 Introduction
3.1 Objectives
3.2 Listening and Reading Skills through Teacher-led Reading Practice
3.3 Glossary
3.3.1 Words
3.3.2 Phrases
3.4 Reading Comprehension
3.5 Critical Analysis
3.6 Creative Task
3.7 General Writing Skills: Letter to Newspaper
3.8 Grammar: Simple Past Tense
3.9 **Non-Detailed Text:** Dickens, Charles. *Hard Times.*

**Unit-IV: * Dr. A.P.J. Abdul Kalam: A Short Biography**
4.0 Introduction
4.1 Objectives
4.2 Listening and Reading Skills through Teacher-led Reading Practice
4.3 Glossary
4.3.1 Words
4.3.2 Phrases
4.4 Reading Comprehension
4.5 Critical Analysis
4.6 Creative Task
4.7 General Writing Skill: Write a letter applying for a job
4.8 Grammar: Past Continuous Tense
4.9 **Non-Detailed Text:** Dickens, Charles. *Hard Times.*

**Unit-V: *Golden Rule: A Poem**
5.0 Introduction
5.1 Objectives
5.2 Listening and Reading Skills through Teacher-led Reading Practice
5.3 Glossary
5.3.1 Words
5.3.2 Phrases



5.4 Reading Comprehension
5.5 Critical Analysis
5.6 Creative Task
5.7 Grammar: Simple Future Tense
5.8 General Writing Skill: Circular-Writing
5.9 **Non-Detailed Text: Dickens, Charles. *Hard Times.***

**Unit-VI: *Hygiene**
6.0 Introduction
6.1 Objectives
6.2 Listening and Reading Skills through Teacher-led Reading Practice
6.3 Glossary
6.3.1 Words
6.3.2 Phrases
6.4 Reading Comprehension
6.5 Critical Analysis
6.6 Creative Task
6.7 General Writing Skill: Writing an Agenda for a Meeting
6.8 Grammar: Future Continuous Tense
6.9 **Non-Detailed Text: Dickens, Charles. *Hard Times.***

**Textbook**

1. Jayraj, S. Joseph Arul et al. *Trend-Setter: An Interactive General English Textbook for Under Graduate Students*. New Delhi: Trinity, 2016. Print.

**Non-Detailed Text:**

1. Dickens, Charles. *Hard Times.* Wordsworth: Printing Press, 1854. Print.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UGE320103 | | | | | Title of the Paper General English-III | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.84 | |
| CO2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.92 | |
| CO3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.92 | |
| CO4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.84 | |
| CO5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.84 | |
| CO6 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.84 | |
| | | | | | | | | | | | | Mean Overall Score | | 4.86 | |

**Result: The Score for this Course is 4.86 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester III** **Hours/Week: 6**
**17UST330207** **Credits: 4**

## DISCRETE PROBABILITY DISTRIBUTIONS

**Course Outcomes:**

1. Compute the Bernoulli trials.
2. Understand the rare case population.
3. Find the Memory less Property of Geometric distribution.
4. Obtain the mean and variance of Hyper geometric distribution.
5. Learn the moments of Multinomial distribution.
6. Understand why Geometric distribution possesses memory less property.

**Unit -I: Bernoulli and Binomial Distributions**

Bernoulli Distribution-Introduction to Binomial Distribution-Moments-recurrence relation for the moments-mean deviation about mean, mode-MGF-Additive property-cumulants-recurrence relation for cumulants-Fitting of Binomial Distribution.

**Unit-II: Poisson Distribution**

Introduction to Poisson Distribution– moments- mode- Recurrence relation for the moments-MGF-Characteristic function –Cumulants-Additive property- Fitting of Poisson Distribution.

**Unit-III: Negative Binomial Distribution**

Introduction to Negative Binomial Distribution- MGF of Negative Binomial Distribution- Cumulants- Poisson as limiting case.

**Unit-IV: Geometric and Hypergeometric Distributions**

Geometric Distribution-Lack of memory concept- moments of Geometric Distribution-Hypergeometric Distribution-Mean and Variance of Hypergeometric Distribution. Approximation to Binomial Distribution.

**Unit-V: Multinomial and Power Series Distributions**

Multinomial Distribution- moments of Multinomial Distribution-Introduction to Power Series distribution (Concept only).

**TEXT BOOKS:**

1. Gupta, S.C. and Kapoor, V.K.: "Fundamentals of Mathematical Statistics", Sultan & Chand & Sons, New Delhi, 11th Ed, 2002.

**REFERENCE BOOKS:**


1. Johnson, N.L. and Kotz, S: "Discrete Distributions", John Wiley and sons, 1969.
2. Johnson, N.L. and Kotz,S.: "Continuous univariate Distributions", Vol.I & Vol.II, John Wiley and sons, 1970.
3. N. Balakrishnan and V. B. Nevzorov: "A primer on Statistical Distributions", John Wiley & Sons, 2005


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UST330207 | Title of the Paper DISCRETE PROBABILITY DISTRIBUTIONS | | | | | | | | | | | Hours 6 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 3 | 2 | 4 | 3.85 |
| CO2 | 4 | 5 | 3 | 4 | 1 | 5 | 5 | 4 | 4 | 4 | 4 | 1 | 4 | 3.69 |
| CO3 | 4 | 5 | 4 | 3 | 2 | 4 | 4 | 4 | 5 | 4 | 3 | 1 | 5 | 3.69 |
| CO4 | 3 | 4 | 5 | 4 | 3 | 4 | 5 | 5 | 4 | 4 | 2 | 2 | 4 | 3.77 |
| CO5 | 4 | 4 | 3 | 4 | 1 | 4 | 4 | 4 | 5 | 4 | 4 | 2 | 4 | 3.62 |
| CO6 | 5 | 4 | 5 | 5 | 1 | 4 | 5 | 3 | 5 | 3 | 5 | 3 | 5 | 4.08 |
| | | | | | | | | | | | | | Mean Overall Score | 3.78 |

**Result: The Score for this Course is 3.78 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester III** **Hours/Week: 5**
**17UST330208** **Credits: 4**

## CONTINUOUS PROBABILITY DISTRIBUTIONS

**Course Outcomes:**

1. Learn the characteristics of Normal distributions.
2. Learn the relationship between beta and gamma distribution.
3. Know the memory less property of exponential distribution.
4. Obtain the difference of two sample tests.
5. Understand the relationship between t and F distributions.
6. Understand why Exponential distribution possesses memory less property.

**Unit-I: Normal Distribution**

Introduction to Normal Distribution-Limiting form of Binomial Distribution-Chief characteristics and its curve-Mean, median, Mode - M.G.F, moments and Cumulants -Points of Inflexion- Area property-Importance of Normal Distributions -fitting of normal distribution - Concept of Bivariate and Multivariate Normal Distributions(Concept only).

**Unit-II: Beta and Gamma Distributions**

Introduction to Beta and Gamma Distributions: M.G.F, mean, harmonic mean, moments, and relationship between Beta and Gamma Distributions.

**Unit-III: Exponential and Cauchy Distributions**

Exponential Distribution- MGF of Exponential Distribution - Cauchy's distribution: characteristic function, additive property and Moments – Lognormal distribution.

**Unit-IV: Standard Laplace Distribution and Weibul Distribution**

Standard Laplace distribution - Characteristic function – mean – variance – Weibul distribution – M.G.F –mean , variance (simple problems only)

**Unit -V: Sampling Distributions**

Sampling distributions: t, $\chi^2$ and F distributions: Derivations of the distributions, Constants and MGF - Interrelationship between these distribution.

**TEXT BOOKS:**

1. Gupta, S.C. and Kapoor, V.K. : "Fundamentals of Mathematical Statistics", Sultan & Chand & SONS,New Delhi, 11th Ed, 2002.



**REFERNECE BOOKS:**

1. Johnson, N.L. and Kotz, S: "Discrete Distributions", John Wiley and Sons, 1969.
2. Johnson, N.L. and Kotz,S.: "Continuous univariate Distributions", Vol.I & Vol.II, John Wiley and Sons, 1970.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UST330208 | Title of the Paper CONTINUOUS PROBABILITY DISTRIBUTIONS | | | | | | | | | | Hours 5 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 4 | 4 | 3 | 3 | 4 | 5 | 4 | 5 | 4 | 2 | 1 | 5 | 3.77 |
| CO2 | 5 | 4 | 2 | 3 | 2 | 5 | 5 | 4 | 4 | 5 | 2 | 1 | 5 | 3.62 |
| CO3 | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 4 | 5 | 4 | 3 | 1 | 4 | 3.46 |
| CO4 | 5 | 4 | 4 | 3 | 1 | 5 | 4 | 4 | 3 | 4 | 1 | 1 | 4 | 3.31 |
| CO5 | 5 | 4 | 3 | 3 | 3 | 4 | 5 | 4 | 5 | 4 | 3 | 1 | 4 | 3.69 |
| CO6 | 5 | 5 | 4 | 3 | 3 | 5 | 4 | 3 | 5 | 4 | 3 | 5 | 5 | 4.15 |
| | | | | | | | | | | | | Mean Overall Score | | 3.68 |

**Result: The Score for this Course is 3.6 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester III** **Hours/Week: 6**
**17UST330403A** **Credits: 5**

**Allied:**
**MATHEMATICS - I**

**Course Outcomes:**

1. Learn the Mathematical Series, like Binomial, exponential etc.,.
2. Know the role of reciprocal equations in theory of equations.
3. Obtain the positive root by Horner's method.
4. Calculate the Eigen values and Eigen vectors.
5. Calculation of inverse of a matrix using Cayley Hamilton theorem.
6. Learn the Quotient rule.
7. Know the importance of Jacobian transformation..
8. Obtain the role of Horner's method in successive iterations.

**Unit-1: Algebra**

Partial fractions, binomial, exponential and logarithmic series (without proof) summation and approximation-simple problems.

**Unit-II: Theory of Equations**

Polynomial equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, transformation of equation by increasing or decreasing roots by a constant, reciprocal equations. Horner's method to find a root approximately - simple problems.

**Unit-III: Matrices**

Symmetric, skew-symmetric, orthogonal and unitary matrices- consistency of equations, Eigen values and Eigen-vectors, Caley-Hamilton theorem (without proof) - verification Computation of inverse matrix using cayey - Hamilton theorem.

**Unit-IV: Differentiation**

Function – Classification of functions – Limit of a function –simple examples – Continuous function – Differentiation of $x^n$, $e^x$, $\log x, \sin x, \cos x$, $\tan x$ - product rule –Quotient rule – Functions of function (Exclude Hyperbolic function) Logarithmic differentiation (Omit Transformation, Implicit functions) Differentiation of one function with respect to another function.

**Unit-V: Mathematical Series**

Expression of function – Taylor's and Maclaurin's series (statement only)

Expansion of $e^x, \sin x, \cos x, \log(1+x), (1+x)^n$. Jacobians

*Note*: Students should be trained to solve simple problems only.

**Textbooks**


1. Allied Maths, Vol.1 & 2 by Prof. P. Duraipandian and Dr. S. Udayabaskaran, Muhil Publishers, Chennai, 2016.
2. Ancillary Mathematics volume 1 and 2 by P.Balasubramanian & K.G.Subramanian.
3. S.Narayanan, T.K.Manikkavasagam Pillai. Calculus Volume (I & II) S.Viswanathan printers and publishers, 2009.
4. Allied Mathematics, by A. Singaravelu


**References:**


1. Integral calculus and differential equations by Dipak Chatterjee, Tata Mcgraw Hill publishers co ltd., 1999.
2. Ancillary mathematics by S.Narayanan and others, S.Viswanathan Publishers, 2009.
3. Allied Mathematics by Dr. P. R. Vittal (Margham Publications).
4. Shantinarayanan, Differential Calculus, S.Chand & Co., 1964
5. Mathematical Analysis, by Chatterji


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UST330403A | | | | | Title of the Paper Allied: MATHEMATICS-I | | | | | | | | Hours 6 | Credits 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 4 | 5 | 3 | 4 | 5 | 4 | 4 | 5 | 3 | 2 | 4 | | 4.00 |
| CO2 | 4 | 5 | 5 | 4 | 2 | 4 | 5 | 4 | 4 | 4 | 2 | 1 | 5 | | 3.77 |
| CO3 | 4 | 3 | 4 | 5 | 1 | 5 | 5 | 4 | 5 | 4 | 3 | 2 | 5 | | 3.85 |
| CO4 | 5 | 5 | 4 | 5 | 2 | 4 | 5 | 5 | 4 | 4 | 2 | 1 | 4 | | 3.85 |
| CO5 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 4 | 4 | 4 | 3 | 2 | 4 | | 4.00 |
| CO6 | 4 | 3 | 4 | 2 | 4 | 5 | 5 | 4 | 5 | 5 | 3 | 2 | 5 | | 3.92 |
| CO7 | 5 | 5 | 4 | 3 | 1 | 5 | 5 | 5 | 4 | 5 | 3 | 1 | 5 | | 3.92 |
| CO8 | 4 | 5 | 5 | 5 | 2 | 4 | 5 | 3 | 5 | 4 | 5 | 3 | 5 | | 4.23 |
| | | | | | | | | | | | Mean Overall Score | | | | 3.94 |

**Result: The Score for this Course is 3.9 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester III** **Hours/Week: 6**
**17UST330403B** **Credits: 5**

**Allied:**
**ACCOUNTS- I**

**Course Outcomes:**

After completing the course, the student will be able to

* Understand the basic concepts of accounting.
* Prepare final accounts and balance sheet.
* Prepare final accounts and balance sheet of non trading concerns.
* Calculate profit for concerns with single entry system through net worth method and conversion method.
* Rectify errors in the books of accounts and prepare Bank Reconciliation Statement.
* Prepare Income & Expenditure account from Receipts.

**Unit-I:** **(18 Hours)**

Accounting- Different types – Financial accounting - Book Keeping – Meaning – objectives - Principles, Concepts and Conventions – Type of accounts – Golden rules of recording – Journal Subsidiary Books (purchase book, sales book, purchase return book, sale return book & Cash book – Ledger.

**Unit-II:** **(18 Hours)**

Trial balance – Trading, Profit and Loss Accounts – Balance Sheet of a Sole Trader(closing stock, outstanding expenses, prepaid expenses, income receivable, received in advance, depreciation and provision for bad debts.

**Unit-III:** **(18 Hours)**

Accounts for Non-trading concerns- Receipts and payment account Vs Income and Expenditure account- Preparation of Income and Expenditure Account from Receipts and Payment Accounts (simple adjustments).

**Unit-IV:** **(18 Hours)**

Single Entry system- Defects of single entry system – Double entry system Vs single entry system – Calculation of profit/loss- net worth method- conversion method

**Unit-V:** **(18 Hours)**

Errors –classification- rectification- suspense account- - preparation of bank reconciliation statement.



**TEXT BOOK**

1. Reddy TS and Murthy A, (2016), Financial Accounting, Margham Publications, Chennai.

**BOOKS FOR REFERENCES**

1. Shukla MC, Grewal TS and Gupta SC, (2016), Advanced Accounts, Volume I, S.Chand and Company Ltd, New Delhi.
2. Gupta RL and Gupta VK, (2014), Financial Accounting, Sultan Chand and Sons, New Delhi.
3. Gupta RL and Radhaswamy, (2016), Advanced Accountancy, Volume I, Sultan Chand and Sons, New Delhi.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17USST330403B | | | | | Title of the Paper Allied: ACCOUNTS-I | | | | | | | | Hours 6 | Credits 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 3 | 4 | 1 | 2 | 4 | 3 | 4 | 1 | 4 | 2 | 4 | 1 | 2.84 | |
| CO2 | 5 | 4 | 5 | 3 | 2 | 5 | 3 | 5 | 3 | 3 | 5 | 2 | 3 | 3.69 | |
| CO3 | 4 | 5 | 3 | 2 | 5 | 2 | 1 | 2 | 5 | 3 | 2 | 4 | 1 | 3.00 | |
| CO4 | 3 | 5 | 2 | 4 | 2 | 5 | 2 | 4 | 3 | 2 | 4 | 5 | 4 | 3.46 | |
| CO5 | 5 | 2 | 5 | 2 | 4 | 4 | 5 | 3 | 2 | 5 | 4 | 5 | 4 | 3.85 | |
| CO6 | 5 | 4 | 5 | 4 | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 5 | 4.15 | |
| CO7 | 3 | 5 | 3 | 4 | 3 | 1 | 1 | 3 | 5 | 2 | 3 | 5 | 4 | 3.22 | |
| CO8 | 5 | 4 | 5 | 4 | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 5 | 4.15 | |
| | | | | | | | | | | | | | Mean Overall Score | | 3.54 |

**Result: The Score for this Course is 3.5 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling*:**

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester III** **Hours/Week: 2**
**17UFC340901** **Credits: 2**

## ENVIRONMENTAL STUDIES

**Course Outcome**

1. To ensure understanding the significance of environment in which we live.
2. To ensure imparting knowledge on the recent issues associated with environment.
3. To ensure educating the youth the causes and consequences of various types of pollutions.
4. To ensure sensitizing the youth the increasing threats to nature and the misery mankind faces.
5. To ensure the limitations of the available natural resources and the need to sustain them.
6. To ensure imparting the knowledge on the concept of biodiversity and its advantages.

**Unit-I: Environmental Studies**

Environment - Scope and Importance - Environmental Movements in India - Eco-feminism - Public Awareness.

**Unit-II: Natural Resources**

Food Resources - L and Resources - Forest Resources - Mineral Resources - Water Resources - Energy Resources

**Unit-III: Ecosystems, Biodiversity and Conservation**

General structure - Functions of ecosystem - Energy flow and ecological pyramids - Biodiversity and conservation - Hot spots of Biodiversity - Endangered and Endemic Species - Value of Biodiversity - Threats to Biodiversity - Conservation of Biodiversity

**Unit-IV: Environmental Pollution**

Air pollution - Water pollution - Oil pollution - Soil pollution - Marine pollution - Noise pollution - Thermal pollution – Radiation pollution

**Unit-V: Environment, Human Population & Social Issues**

Human population growth - Urgent steps required for sustainable development - Conserving water - Current Environmental Issues

**Text Book:**

1. **Environmental studies,** Department of Foundation course, St.Joseph's College, Tiruchirappalli-2, 2015.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester III | Course Code 17UFC340901 | | | | | Title of the Paper ENVIRONMENTAL STUDIES | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 5 | 5 | 5 | 3 | 5 | 4 | 4 | 4 | 5 | 3 | 4 | 3 | 4.0 | |
| CO2 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4.5 | |
| CO3 | 5 | 4 | 5 | 5 | 3 | 5 | 4 | 4 | 5 | 3 | 3 | 4 | 2 | 4.0 | |
| CO4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 3 | 4.2 | |
| CO5 | 5 | 5 | 4 | 5 | 4 | 3 | 5 | 5 | 4 | 4 | 5 | 3 | 4 | 4.3 | |
| CO6 | 5 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | 4 | 3.7 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.1 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester IV** **Hours/Week: 2**
**17UFC441004A** **Credits: 2**

## FORMATION OF YOUTH-II

**Course Outcome**

1. To ensure preparing the students to live in harmony with nature.
2. To ensure the youth the significance of public health and the related issues.
3. To ensure sensitizing the youth about addictions and their consequences.
4. To ensure educating the youth on disaster management and First-Aid.
5. To ensure enlightening on the developmental issues and challenges of youth today.
6. To ensure the value of counselling for attaining positive mental health.

**Unit-I: Harmony with Nature**

What is environment, Why should we think of harmony, Longing for human well-being, Principles to conserve environmental resources, Causes of disharmony, The fruits of harmony with nature, Forest resources, Water resources, Mineral resources, Food resources, Fruits of dishormony, Economic values and growth, Environmental Ethics, Guidelines to live in harmony with nature, Towards life-centered system for better quality of life

**Unit-II: Public Health**

Health related issues, Health Care in India vs Developed Countries, Health and Heredity, Public Health - The Indian Scenario, Objectives of public health in India, Public Health System in India, Failure on the public health front, Role of the central government, Hospitals Services in India, Health and Abortion, Health and Drug Addiction, Drug abuse

**Unit-III: Disaster Management and First-Aid**

Disaster Management, Types of disaster, Plans of disaster management, Technology to manage natural disasters and catastrophes, Disaster Management, Rehabilitation and Reconstruction, Human-induced disaster, First Aid, The importance of First-aid, Disaster Declaration and Response

**Unit-IV: Issues Dealing with Science**

What is Science, Science and Religion, Social Relevance of Science and Technology, Science and technology for social justice, Difference caused by Science and Technology, Need for indigenous technology, Science,

Technology and Innovation Policy of India, Harnessing the forces of science and technology for the future

**Unit-V: Counselling for the Adolescents**

High Risk Behaviours, Developmental Changes in Adolescents, Key Issues of the Adolescents, Need for Counselling, Nature of Counselling, Counselling Goals, Does helping help? The Good and the Bad news.

**Text Book:**


1. **Formation of Youth,** Department of Foundation course, St.Joseph's College, Tiruchirappalli-2, 2016.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UFC441004A | | | | | Title of the Paper FORMATION OF YOUTH-II | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 4 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 5 | 4 | | 4.4 |
| CO2 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | | 4.2 |
| CO3 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | | 4.2 |
| CO4 | 3 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | | 4.0 |
| CO5 | 2 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | | 4.3 |
| CO6 | 4 | 3 | 4 | 4 | 5 | 3 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | | 4.2 |
| | | | | | | | | | | | | | Mean Overall Score | | 4.2 |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester IV** **Hours/Week: 2**
**17UFC441004B** **Credits: 2**

## RELIGIOUS DOCTRINE-II

### Course Outcome

1. To ensure appreciation of the harmony of religion.
2. To ensure training the youth in the power of prayer.
3. To ensure the understanding of Mary's role in salvation history and Marian Dogmas.
4. To ensure enlightening the graces and invisible effects of the sacraments.
5. To ensure the youth with the promise that God forgives failings on repentance.
6. To ensure understanding the concept of salvation and the promise of eternal life.

### Unit: I Harmony of Religions

Introduction - Religions of India - Buddhism - Jainism - Sikhism - Judaism - Confucianism - Christianity - Zoroastrianism - Islam

### Unit: II The Christian Prayer

Prayer Defined - Reasons to pray - The Way to Pray - Types of Prayer - Obstacles for Prayer - Prayer in Old -The Lord's Prayer

### Unit: III Mary, the Blessed Virgin, Mother of God

Introduction - Marian Dogmas - Mary in need of Redemption - Mary in the New Testament - Apparitions of Mary - Devotion to Mary

### Unit: IV Sacraments of Initiation

Introduction - An Overview - Baptism - Confirmation - Holy Eucharist

Unit: V Sacraments of Healing & at the Service of the Community

Reconciliation - Anointing of the Sick - Holy Orders – Matrimony

### Text Book:

1. **Life in the Lord,** Department of Foundation course, St. Joseph's College, Tiruchirappalli-2, 2011.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UFC441004B | | | | | Title of the Paper RELIGIOUS DOCTRINE-II | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3.9 | |
| CO2 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3.9 | |
| CO3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 4.2 | |
| CO4 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3.9 | |
| CO5 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 3.8 | |
| CO6 | 4 | 1 | 4 | 3 | 3 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4.0 | |
| | | | | | | | | | | | | Mean Overall Score | | 3.9 | |

**Result: The Score for this Course is 3.9 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**பருவம்: 4** **மணி நேரம்: 4**

**17UGT410004** **புள்ளிகள்: 3**

## பொதுத்தமிழ்-IV

**பாடத்தின் விளைவு**

- நாடகத்தின் போக்குகள், உத்திகள், பாத்திரப்படைப்பு, உரையாடல் முறை, கற்பனைத்திறம் போன்றவற்றை அறிந்துகொள்ளுதல்.
- புதிய நாடகங்களைப் படைக்கும் திறனைப் பெறுதல்.
- நாடகங்களை நடிக்கும் திறன் பெறுதல்
- கிரேக்க, ஆங்கில நாடகங்களை அடியொற்றி தமிழ்நாடகம் தோன்றிய வரலாறு அறியச் செய்தல்.
- சங்ககாலம் தொட்டு இக்காலம் வரை காதல் பற்றிய உணர்வுகளை எடுத்துரைத்தல்.
- தமிழ் வரலாற்றின் மன்னர்களின் ஆட்சியின் சிறப்புகளையும் வீழ்ச்சிகளையும் எடுத்துக்காட்டுதல்.

**அலகு-1** **(12 மணி நேரம்)**

மனோன்மணீயம், பாயிரம், அங்கம் - 1, களம் 1 - 5 வரை.

**அலகு-2** **(12 மணி நேரம்)**

மனோன்மணீயம், அங்கம் - 2, களம் 1 - 3 வரை.

இலக்கிய வரலாறு நான்காம் பாகம் - தமிழும் பிற துறைகளும் பக்கம் (365-387).

**அலகு-3** **(12 மணி நேரம்)**

மனோன்மணீயம், அங்கம் - 3, களம் 1 - 4 வரை.

உரைநடை நாடகம் ( கௌதம புத்தர்)

**அலகு-4** **(12 மணி நேரம்)**

மனோன்மணீயம், அங்கம் - 4, களம் 1 - 5 வரை.

இலக்கிய வரலாறு நான்காம் பாகம் - சமயத்தவரின் தமிழ்ப்பணி (பக்கம் 391-402)

**அலகு-5** **(12 மணி நேரம்)**

மனோன்மணீயம், அங்கம் - 5, களம் 1 - 3 வரை.

இலக்கிய வரலாறு நான்காம் பாகம் - வெளிநாடுகள் தந்த தமிழ் இலக்கியம் (பக்கம் 410-435)

**பாடநூல்கள் :**


1. சுந்தரனார், மனோன்மணீயம், தமிழாய்வுத்துறை (பதிப்பு), தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2. (அங்கம் : 3 களம் : 4 நீங்கலாக)
2. பாலசுப்பிரமணியம். கு.வெ, கௌதம புத்தர், அய்யா நிலையம், தஞ்சாவூர்
3. சமூகவியல் நோக்கில் தமிழிலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, 2014.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UGT410004 | | | | | Title of the Paper பொதுத்தமிழ்-IV | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 3 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4.5 | |
| CO2 | 5 | 4 | 3 | 5 | 4 | 5 | 5 | 4 | 4 | 3 | 4 | 5 | 5 | 4.3 | |
| CO3 | 4 | 3 | 3 | 5 | 4 | 3 | 3 | 4 | 3 | 3 | 4 | 5 | 5 | 3.7 | |
| CO4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4.8 | |
| CO5 | 3 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4.1 | |
| CO6 | 4 | 3 | 4 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | 2 | 2 | 3 | 3.4 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.1 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\textbf{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \textbf{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semestre: IV** **Hours/Week: 4**
**17UGH410004** **Credits: 3**

## HINDI-IV

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* the ability to empower the students with globally employable soft skills
* the ability to translate Hindi passages to English
* the ideas on human values
* the ability to instruct the moral values given by the Bhakthi Saints
* the knowledge of Indian festivals .
* the knowledge of culture and tradition

**Unit-I** **8 hours**

Vidyarthi, Banking Shabda, Anuvad, Anuvad Lesson – 1, Adhikal, Premchand

**Unit-II** **12 hours**

Pusthakalaya, Nemikaryalaya Tippaniyan, Anuvadak, Anuvad lesson-2, Bakthikal-Gyan Marg, Mahadevivarma

**Unit-III** **12 hours**

Thyohar, Anuvad Ke Gun, Anuvad lesson – 3, Bakthi, Tippaniyaan, Prem Marg, Pant

**Unit-IV** **14 hours**

Yugpuresh Gandhi, Anuvadak Ke Gun, Anuvad Lesson – 4 Bakthikal, Bakthikal – Ram Bakthi Kal - Krishna Bakthi, Dinkar

**Unit-V** **14 hours**

Braman, Anuvad ek kala, Swarnayug Bakthikal, Anuvad Lesson - 5, Reetikal, Chayavad

**Books Recommended**


1. Kendriya Sachivalaya, Hindi Parishad New Delhi, Karyalaya Sahayika, 2016.
2. Dakshin Bharat Hindi Prachar Sabha Chennai-17, Niband Radhana, Hindi, 2016.
3. DBHP Sabha, Chennai-17, Anuvad Abyas-3, Hindi, 2016
4. Rajnath Sharma, Hindi Sahitya ka Itihas, Vinkod Pustak Mandir, Agra-2, 2016.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UGH410004 | | | | | Title of the Paper Hindi-IV | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 5 | 4 | 4 | | 3.5 |
| CO2 | 3 | 3 | 2 | 3 | 3 | 3 | 5 | 3 | 4 | 3 | 3 | | 3.1 |
| CO3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | | 3.1 |
| CO4 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | | 2.7 |
| CO5 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 3 | 3 | 4 | 4 | | 3.3 |
| CO6 | 4 | 4 | 4 | 4 | 3 | 5 | 3 | 5 | 4 | 4 | 3 | | 3.9 |
| | | | | | | | | | | Mean Overall Score | | | 3.3 |

**Result: The Score for this Course is 3.3 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semestre: IV** **Heures /Semaine: 4**
**17UGF410004** **Points : 3**

## FRANÇAIS-IV

**Course Outcomes**

* Comparer la culture de l'Inde et de la France
* Familiariser l'étudiant avec le vocabulaire, la grammaire et les conversations
* Connaître les auteurs français (20 auteurs) et leurs œuvres
* Dire qu'on aime quelqu'un/ quelque chose
* Demander des informations
* Exprimer une opinion personnelle et Justifier son opinion.

**Unit-I : Prières du Nouvel An** **(10 heures)**

Exprimer l'inquiétude, le regret, le souhait, l'obligation, la sympathie.

**Grammaire :** Le subjonctif, verbe craindre

**Unit-II : Retrouvailles** **(10 heures)**

Marquer la surprise

**Grammaire :** Le subjonctif, pronoms possessifs.

**Unit-III : C'est lui le meilleur ! (10 heures)**

Dire qu'on aime quelqu'un/ quelque chose, donner son opinion, insister.

**Grammaire :** Le superlatif, les pronoms démonstratif.

**Unit-IV Sauvons notre Terre !** **(15 heures)**

Enchaînement de cause et d'effet, demander à quelqu'un de tenir compté de quelque chose.

**Grammaire :** Le plus-que-parfait, il y a.

**Unit-V : Le jour des élections s'approche et les auteurs français (20 auteurs) et leurs œuvres** **(15 heures)**

Demander des informations, dire qu'une action n'est pas utile, exprimer une opinion personnelle, Justifier son opinion.

**Grammaire :** Le participe présent – le gérondif, la voix passive.

**Manuel**:


1. K.Madanagobalane, **Synchronie-II**, Samhitâ Publication, 2011.


**Livre de référence**:


1. Annie Berthet /B_atrix Sampsonis/ Catherine Hugot /V_ronnique M Kizirian / Monique Waendendries, **Alter Ego A1**, Hachette, 2006.
2. Yves Loiseau/R_gineM_rieux, Connexions 1, Didier, 2011.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UGF410004 | | | | | Title of the Paper French-IV | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 4 | 4 | 2 | 3 | 4 | 4 | 2 | 3 | 2 | 2 | 3 | | 3.0 |
| CO2 | 3 | 3 | 3 | 3 | 4 | 4 | 2 | 4 | 3 | 2 | 3 | | 3.1 |
| CO3 | 3 | 2 | 3 | 2 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | | 3.1 |
| CO4 | 3 | 3 | 4 | 3 | 4 | 1 | 2 | 2 | 4 | 3 | 3 | | 2.9 |
| CO5 | 3 | 3 | 4 | 3 | 4 | 3 | 2 | 2 | 4 | 4 | 5 | | 3.4 |
| CO6 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 2 | 4 | 3 | 4 | | 3.4 |
| | | | | | | | | | | | Mean Overall Score | | 3.2 |

**Result: The Score for this Course is 3.2 (High Relationship)**

*Note:*

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

*Values Scaling:*

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester: IV** **Hours/Week: 4**

**17UGS410004** **Credits : 3**

## SANSKRIT-IV

**Course Outcomes**

At the end of the course, a student should be able to demonstrate…

* knowledge and understanding of the history of Sanskrit Drama.
* knowledge and understanding of the Nataka vivaranam.
* the introduction of Functional - Sanskrit conversation Letter writing.
* the ability to apply relevant theoretical perspectives to topics within the field of study
* the competence in academic writing and oral presentation skills.
* the ability to work both independently and in groups on presentations and/or development of Projects.

**Unit-I** **8 hours**

Paataah – Asta, Nava Dasha, Sankhya prayogah.

**Unit-II** **12 hours**

Lot lakaarah. Prqayaogah. Kartari Vaakyaani

**Unit-III** **12 hours**

Naatakasya Itihaasah.

**Unit-IV** **14 hours**

Karnabhaaram. Naatakam.

**Unit-V** **14 hours**

Kathaapaatra Vailaksharnyam.

**Books recommended:**


1. R.S.Vadhyar & Sons, Book-Sellers and Publishers, Kalpathi, Palghat 678003, Kerala, South India, History of Sanskrit Literature, 2014.
2. Samskritha Bharathi, Aksharam 8th Cross, 2nd Phase, Giri Nagar, Bangalore. Vadatu Sanskritam – Samskara Binduhu, 2014.
3. R.S. Vadhyar & Sons, Book-Sellers and Publishers, Kalpathi, Palghat 678003, Kerala, Soth India. Karnabharam, 2014.
4. Kulapathy, K.M., Saral Sanskrit Balabodh, Bharathiya vidya Bhavan, Munshimarg, Mumbai 400007, 2014.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UGS410004 | | | | | Title of the Paper Sanskrit-IV | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | | |
| CO1 | 5 | 3 | 5 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | | 3.1 |
| CO2 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 3 | | 3.1 |
| CO3 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | | 3.2 |
| CO4 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | | 3.1 |
| CO5 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | | 3.0 |
| CO6 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | | 3.2 |
| | | | | | | | | | | Mean Overall Score | | | 3.1 |

**Result: The Score for this Course is 3.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester: IV** **Hours/Week: 5**
**17UGE420104** **Credits: 3**

## GENERAL ENGLISH-IV

**Course Outcome**

* Comprehend the local and global issues through the lessons
* Do the tasks centering on skill development and enhance their Grammar Using and Writing Skills
* Use interactive skills
* Train and develop the Listening and Reading Skills of the learners through teacher-led reading practice
* Improve their General Writing Skills such as Note-Taking, Note-Making, Précis Writing, Paragraph Writing, and Writing Short Essays on Current Issues/General Topics
* Understanding the social background and human character of the period

**Unit-VII:**

***Women through the Eyes of Media**

7.0 Introduction
7.1 Objectives
7.2 Listening and Reading Skills through Teacher-led Reading Practice
7.3 Glossary
7.3.1 Words
7.3.2 Phrases
7.4 Reading Comprehension
7.5 Critical Analysis
7.6 Creative Task
7.7 General Writing Skill: Writing Minutes of a Meeting
7.8 Grammar: Present Perfect Tense
7.9 **Non -Detailed Poem:** Thomas Hood (1799–1845): "Silence"

**Unit-VIII:**

***Effects of Tobacco Smoking**

8.0 Introduction
8.1 Objectives
8.2 Listening and Reading Skills through Teacher-led Reading Practice
8.3 Glossary
8.3.1 Words
8.3.2 Phrases



8.4 Reading Comprehension
8.5 Critical Analysis
8.6 Creative Task
8.7 General Writing Skill: Note-Taking
8.8 Grammar: Present Perfect Continuous Tense
8.9 **Non -Detailed Poem:** Coventry Patmore (1823-1896): "The Toys"

**Unit-IX:**

*** Short Message Service (SMS)**

9.0 Introduction
9.1 Objectives
9.2 Listening and Reading Skills through Teacher-led Reading Practice
9.3 Glossary
9.3.1 Words
9.3.2 Phrases
9.4 Reading Comprehension
9.5 Critical Analysis
9.6 Creative Task
9.7 General Writing Skill: Note-Making
9.8 Grammar: Past Perfect Tense
9.9 **Non -Detailed Poem:** Stephen Spender (1909-1995): "Daybreak"

**Unit-X:**

***An Engineer Kills Self as Crow Sat on his Head: A News Paper Report**

10.0 Introduction
10.1 Objectives
10.2 Listening and Reading Skills through Teacher-led Reading Practice
10.3 Glossary
10.3.1 Words
10.3.2 Phrases
10.4 Reading Comprehension
10.5. Critical Analysis
10.6. Creative Task
10.7 General Writing Skill: Précis Writing
10.8 Grammar: Past Perfect Continuous Tense
10.9 **Non -Detailed Poem:** Gabriel Imomotimi Okara (1921): "Once Upon a Time"

**Unit-XI:**

***Traffic Rules**

11.0 Introduction
11.1 Objectives
11.2 Listening and Reading Skills through Teacher-led Reading Practice
11.3 Glossary
11.3.1 Words
11.3.2 Phrases
11.4 Reading Comprehension
11.5 Critical Analysis
11.6 Creative Task
11.7 General Writing Skill: Paragraph Writing
11.8 Grammar: Future Perfect Tense
11.9 **Non -Detailed Poem:** Robert Winner (1930-1986): "Opportunity"

**Unit-XII:**

***A Handful of Answers: A Zen Tale**

12.0 Introduction
12.1 Objectives
12.2 Listening and Reading Skills through Teacher-led Reading Practice
12.3 Glossary
12.3.1 Words
12.3.2 Phrases
12.4 Reading Comprehension
12.5 Critical Analysis
12.6 Creative Task
12.7 General Writing Skill: Writing Short Essays on Current Issues/General Topics
12.8 Grammar: Future Perfect Continuous Tense
12.9 **Non -Detailed Poem:** Ted Hughes (1930–1998): "The Harvest Moon"

**Textbook**

1. Jayraj, S. Joseph Arul et al. *Trend-Setter: An Interactive General English Textbook for Under Graduate Students*. New Delhi: Trinity, 2016. Print.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UGE420104 | | | | | Title of the Paper General English-IV | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | | 4.61 |
| CO2 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | 4.69 |
| CO3 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | | 4.23 |
| CO4 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | | 4.30 |
| CO5 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | | 4.38 |
| CO6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | | 4.61 |
| | | | | | | | | | | | | | Mean Overall Score | | 4.47 |

**Result: The Score for this Course is 4.47 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester IV** **Hours/Week: 4**
**17UST430209** **Credits: 3**

## ESTIMATION THEORY

**Course Outcomes:**

1. Learn the properties of good estimator.
2. Know the importance of maximum likely hood estimator.
3. Understand the types of estimation.
4. Know the role of Confidence interval in interval estimation.
5. Show the examples of prior and posterior distributions.
6. Obtain the importance of Cramer rao rule.

**Unit-I:**

**Point Estimation Theory**

Parametric Estimation: Estimator - Characterisitics of an Estimator - Consistency and Unbiasedness of an Estimator-Cramer-Rao Inequality.Efficiency-Asypmtotic efficiency of an Estimator- Estimators based on Sufficient Statistics- Neyman's Factorization Theorem (without proof)- Rao-Blackwell Theorem.

**Unit-II:**

**Methods of Point Estimation-1**

Methods of point estimation-Method of Maximum Likelihood Estimator (MLE) - Properties of MLEs(without proof) – Problems based on MLEs.

**Unit-III:**

**Methods of Point Estimation-2**

Method of Moments – Problems-Method of Least Squares - Method of Minimum Chi-square-Method of Minimum variance-Minimum Variance Unbiasred Estimation (MVUE)-Problems based on MVUE.

**Unit-IV:**

**Interval Estimation**

Concept of interval estimation - Interval estimation in case of large samples - Confidence interval for proportions, means and variances based on Normal distribution - Interval estimation in case of small samples – Confidence interval for means and variances based on Students – t distribution.

**Unit-V:**

**Baye's Estimation**

Elements of Baye's estimation – Prior and Posterior distributions – Examples.



**Textbooks**

1. Gupta, S.C. and Kapoor, V.K.: "Fundamentals of Mathematical Statistics", Sultan Chand & Sons, New Delhi, 2011.

2. Rohatgi, V.K. (1984) An introduction to probability theory and mathematical statistics, Wiley Eastern.

**Reference Book**

1. Kendall, M. and Stuart, A.: "The advanced theory of Statistics" Vol. II, Charles Griffin, 2010.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UST43020 | | | | | Title of the Paper ESTIMATION THEORY | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 5 | 3 | 4 | 2 | 4 | 5 | 4 | 4 | 4 | 2 | 1 | 4 | 3.65 | |
| CO2 | 4 | 4 | 3 | 2 | 2 | 4 | 4 | 4 | 5 | 4 | 3 | 1 | 4 | 3.58 | |
| CO3 | 4 | 4 | 3 | 3 | 2 | 4 | 5 | 5 | 4 | 4 | 2 | 1 | 4 | 3.62 | |
| CO4 | 5 | 3 | 4 | 5 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 2 | 5 | 3.65 | |
| CO5 | 5 | 5 | 4 | 4 | 1 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 4 | 3.69 | |
| CO6 | 4 | 3 | 5 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 4.15 | |
| | | | | | | | | | | | | | Mean Overall Score | | 3.71 |

**Result: The Score for this Course is 3.7 (High Relationship)**

*Note:*

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

*Values Scaling:*

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$$

$$\text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester IV** **Hours/Week: 5**
**17UST430210** **Credits: 3**

## TESTING OF HYPOTHESIS

**Course Outcomes:**

1. Know about the two types of errors.
2. Know the role of Neyman – Pearson Lemma in testing of hypothesis.
3. Learn the properties of Like likelihood ratio test.
4. Know the test of significance for small samples..
5. Calculate the problems using non parametric tests.
6. Learn the role of Non parametric tests.

**Unit-I: Testing of Hypothesis-1**

Testing of Hypothesis - Statistical Hypothesis - Simple and composite hypothesis, Null and Alternative hypothesis - two kinds of errors, level of significance, size and power of a test, most powerful test, Neyman-Pearson lemma with proof.

**Unit-II: Testing of Hypothesis-2**

Simple examples using Neyman-Pearson lemma .Uniformly most powerful tests and unbiased tests based on normal Likelihood ratio test (without proof) and its properties. Application of LR test for single mean.

**Unit-III: Test of Significance for Large Samples**

Test of significance for mean(s), variance(s), proportion(s), correlation coefficient(s) based on Normal distribution.

**Unit-IV: Test of Significance for Small Samples**

Test of significance for mean(s), variance(s), correlation coefficient(s), regression coefficient, based on t, Chi-square and F-distributions. Applications of Chi-square in test of significance (independence of attributes, goodness of fit).

**Unit-V: Non-parametric Tests**

Non-parametric tests – Kolmogorov -Smirnov test, Sign test, Wald- Wolfowitz run test, run test for randomness, median test, Wilcoxon test and Wilcoxon – Mann-Whitney U test.

**Textbook**

1. Gupta, S.C. and Kapoor, V.K.: "Fundamentals of Mathematical Statistics", Sultan & Chand & Sons, New Delhi, 11th Ed, 2002.

**Reference Books**


1. Kendall, M. and Stuart, A.: "The advanced theory of Statistics" Vol.II, Charles Griffin, 1961.
2. Rohatgi, V.K. : "Statistical Inference", John Wiley and Sons, 2003.
3. Hogg, R.V, Craig. A.T. and Tannis: "Introduction to Mathematical Statistics", Prentice Hall, England, 1995.
4. Dudewicz. E.J and Mishra.S.N.: "Modern Mathematical statistics", John Wiley and Sons, 1988.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UST430210 | | | | | Title of the Paper TESTING OF HYPOTHESIS | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 4 | 3 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 3 | 2 | 4 | | 3.77 |
| CO2 | 5 | 5 | 4 | 4 | 2 | 4 | 5 | 5 | 4 | 4 | 2 | 1 | 4 | | 3.77 |
| CO3 | 4 | 3 | 5 | 4 | 2 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | 3 | | 3.38 |
| CO4 | 5 | 4 | 5 | 5 | 1 | 5 | 5 | 4 | 4 | 4 | 2 | 1 | 5 | | 3.85 |
| CO5 | 5 | 4 | 3 | 5 | 3 | 4 | 5 | 4 | 4 | 4 | 3 | 2 | 4 | | 3.85 |
| CO6 | 5 | 5 | 4 | 3 | 2 | 4 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | | 4.08 |
| | | | | | | | | | | | | | | Mean Overall Score | 3.78 |

**Result: The Score for this Course is 3.7 (High Relationship)**

*Note:*

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

*Values Scaling:*

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester IV** **Hours/Week: 4**
**17UST430301A** **Credits: 4**

**Core Elective-1 (WD):**
**SAMPLING THEORY**

**Course Outcomes:**

1. Learn the role of pilot survey in sampling.
2. Understand the concept of sampling and non sampling errors..
3. Understand the properties of unbiased estimate of the mean and variance of the estimated mean.
4. Comparison of simple random sampling and stratified random sampling.
5. Understand the circular sampling.
6. Obtain the role of circular sampling.

**Unit-I:**

**Sample Survey**

Complete enumeration Vs Sampling – need and limitations of sampling design -Organization and Execution of Sample Surveys-Essential aspects of Sample Survey-Pilot Survey-Sources of Error in a survey. Sampling and Non-sampling errors.

**Unit-II:**

**Simple Random Sampling**

Simple random sampling (WR and WOR) - Use of Random number Table-Unbiased estimates of Mean and Variance - Sampling for attributes.

**Unit-III:**

**Stratified Random Sampling-I**

Stratified Random Sampling: Properties - Unbiased Estimate of the Mean and Variance of the Estimated Mean

**Unit-IV:**

**Stratified Random Sampling-II**

Proportional and Optimum Allocation – Neyman's Allocation - Comparison of Stratified and Simple Random Sampling.

**Unit-V:**

**Systematic Sampling**

Systematic Sampling: Estimation of the Mean and Variance – Comparison of Simple, Stratified and Systematic Sampling – Population with Linear Trend - Circular Systematic Sampling.



**Textbooks**

1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Applied Statistics, Sultan Chand & Co., 11th ed., 2011 (Units I-IV).
2. William G. Cochran.: Sampling Techniques, John Wiley Sons, 1999.

**Reference Book**

1. Daroga Singh and Choudary, F.S.: Theory and Analysis of Sample Survey Designs, New age international publishers, 1987.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UST430301A | | | | | Title of the Paper Core Elective-I (WD): SAMPLING THEORY | | | | | | | | Hours 4 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 3 | 4 | 2 | 5 | 4 | 4 | 5 | 4 | 3 | 2 | 4 | 3.77 | |
| CO2 | 4 | 5 | 4 | 3 | 2 | 5 | 4 | 5 | 4 | 5 | 2 | 1 | 5 | 3.77 | |
| CO3 | 5 | 4 | 3 | 5 | 1 | 4 | 4 | 4 | 5 | 4 | 2 | 1 | 5 | 3.62 | |
| CO4 | 5 | 4 | 4 | 3 | 2 | 5 | 4 | 5 | 4 | 5 | 2 | 2 | 4 | 3.77 | |
| CO5 | 4 | 5 | 5 | 4 | 1 | 4 | 4 | 5 | 4 | 4 | 2 | 1 | 3 | 3.54 | |
| CO6 | 3 | 5 | 4 | 5 | 3 | 4 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | 4.15 | |
| | | | | | | | | | | | | Mean Overall Score | | 3.77 | |

**Result: The Score for this Course is 3.7 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester IV** **Hours/Week: 4**
**17UST430301B** **Credits: 4**

## Core Elective-1 (WD): REAL ANALYSIS

**Course Outcomes:**

1. Understand the concept of types of sequence.
2. Learn the Cauchy's general principle of convergence..
3. Understand the role of mean value theorem in series.
4. Calculate the Taylor's series and Maclaurin's series.
5. Learn the Beta and Gamma integrals.
6. Obtain the benefits of Leibenitz rule.

**Unit-I: Fundamental concepts**

Definition of a sequence-limit of a sequence-convergence and divergence of sequence - Bounded sequence-monotone sequence - Operations on convergent and divergent sequences. Limit superior and Limit inferior-Cauchy's general principle of convergence (statement only).

**Unit-II: Series**

Series - sequence of partial sums - Convergence of series. A necessary condition for convergence of a series with non – negative terms – Tests for the convergence of series: Direct comparison test, Comparison test by limits, p test, D'Alembert's ratio teat and Cauchy's root test. Alternating series: Leibinitz test for the convergence of an alternating series – conditional convergence and absolute convergence – Simple problems.

**Unit-III: Differential Calculus**

Concepts of Derivatives – Algebra of derivatives – Rolle's theorem – Mean value theorem - Caughy's formula – Taylor's series and Maclaurin's series of functions of one variable. Simple problems ( $e^x$, log(1+x),cosx, sinx).

**Unit-IV: Integral Calculus**

Definition of Riemann Integral – Necessary and Sufficient condition for Riemann integral. Darboux theorem – Fundamental theorems of Integral calculus – First mean value theorem.

**Unit -V: Improper Integrals**

First kind, Second kind – Beta and Gamma integrals and their properties – Simple problems.

**TEXT BOOKS:**


1. Goldberg, R.R.: Methods of Real Anaylsis, Oxford &IBH, 2012.
2. Ranjit Singh and Arora: First course in Real Analysis, Sultan Chand, 1974.
3. Narayanan and Manickavasagam pillai, Ancillary Mathematics, 2009.


**REFERENCE BOOKS:**


1. Tom Apostol: Mathematical Analysis, 2nd Ed, Narosa Publishing House, 1994.
2. Malik, S.C.: Mathematical Analysis (Wiley Eastern), 2017.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UST430301B | | | | | Title of the Paper Core Elective-I (WD): REAL ANALYSIS | | | | | | | | Hours 4 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 5 | 4 | 2 | 4 | 5 | 4 | 5 | 4 | 3 | 2 | 5 | 4.00 | |
| CO2 | 5 | 5 | 4 | 3 | 2 | 5 | 5 | 4 | 4 | 4 | 2 | 1 | 4 | 3.69 | |
| CO3 | 5 | 5 | 5 | 5 | 1 | 4 | 5 | 4 | 5 | 5 | 3 | 2 | 4 | 4.08 | |
| CO4 | 5 | 4 | 3 | 4 | 1 | 5 | 4 | 5 | 4 | 5 | 2 | 1 | 3 | 3.54 | |
| CO5 | 4 | 4 | 3 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 2 | 1 | 4 | 3.62 | |
| CO6 | 3 | 3 | 3 | 5 | 3 | 4 | 4 | 5 | 3 | 5 | 3 | 5 | 4 | 3.85 | |
| | | | | | | | | | | | | Mean Overall Score | | 3.79 | |

**Result: The Score for this Course is 3.79 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester IV** **Hours/Week: 6**
**17UST430404A** **Credits: 4**

**Allied:**
**MATHEMATICS-II**

**Course Outcomes:**

1. Know the role of Bernoulli's formula for integral calculus.
2. Obtain the different types of particular integrals.
3. Understand the importance of Lagrange's equation in partial differential equations..
4. Obtain the role of alternating series.
5. Understand the usage of convergent and divergent series.
6. Know the role of Bernoulli's formula for integral calculus.

**Unit-I: Integral Calculus**

Integration of irrational, trigonometric functions, Bernoulli's formula for integration by parts, reduction formulae, properties of definite integral and simple problems, Evaluation of double, triple integrals, simple applications to area, volume and centroid,

**Unit-II: Ordinary Differential Equations**

First order and higher differential equations. Second order differential equations with constant coefficients $e^{ax}$, $\sin^{ax}$, cosax, $x^m$, $e^{ax}V$.

**Unit-III: Partial Differential Equations**

Formation, complete integrals and general integrals, four standard types, lagrange's equations.(Simple problems)

**Unit-IV: Sets and Functions**

Bunded sets,- functions-supremum – infremum –sequences – limit of a function –sum and product increasing sequence – sequence $\{a^n\}$–Infinite series – convergence –divergence – geometric series – the series $\sum \frac{1}{n^k}$ - properties –series of positive terms.

**Unit-V: Sequence and Series**

Test of comparison , Integral test and Cauchy's test D'Alembert's ratio test - Alternating series – Leibnitz's test – series of positive and negative terms - Absolute and conditional convergence.



*Note*:

Students should be trained to solve simple problems only.

**Textbooks**


1. Allied Mathematics by Dr. P. R. Vittal (Margham Publications). 3rd ed., 2012.
2. Bali N. P and Manish Goyal, "A Text book of Engineering Mathematics", Eighth Edition, Laxmi Publications Pvt Ltd., (2011).
3. Grewal. B.S, "Higher Engineering Mathematics", 41 st Edition, Khanna Publications, Delhi, (2011).
4. Engineering Mathematics-I by A Singaravelu 2013 regulatiion., A.R & Lakshmi publications
5. Allied Maths volumes 1 and 2 by Prof. P. Duraipandian and Dr. S. Udayabaskaran, Muhil Publishers, Chennai. 2016.
6. Ancillary mathematics volume 1 and 2 by P.Balasubramanian & K.G.. Subramanian.
7. J. C. Burkill, 1979, A first course in mathematical analysis, Vikas publishing house Pvt, Ltd.


**References:**


1. Integral Calculus and Differential Equations by Dipak Chatterjee, Tata Mcgraw Hill Publishers Co Ltd., 1999.
2. Ancillary Mathematics by S.Narayanan and others, S.Viswanathan Publishers, 2015.
3. A first course in Mathematical analysis by D.Somasundaram – B.Choudry, Narosha publishing house, New Delhi, 2014.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UST430404A | | | | | Title of the Paper Allied: MATHEMATICS-II | | | | | | | | Hours 6 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 4 | 5 | 2 | 4 | 5 | 4 | 4 | 5 | 3 | 2 | 4 | | 3.92 |
| CO2 | 5 | 4 | 4 | 3 | 3 | 4 | 5 | 5 | 4 | 4 | 3 | 2 | 5 | | 3.92 |
| CO3 | 5 | 4 | 5 | 4 | 1 | 4 | 4 | 4 | 4 | 4 | 2 | 1 | 3 | | 3.46 |
| CO4 | 5 | 5 | 4 | 3 | 2 | 5 | 4 | 4 | 5 | 4 | 2 | 1 | 5 | | 3.77 |
| CO5 | 5 | 5 | 3 | 4 | 1 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | | 4.00 |
| CO6 | 5 | 4 | 4 | 5 | 2 | 4 | 5 | 4 | 4 | 5 | 3 | 2 | 4 | | 3.92 |
| | | | | | | | | | | | | | Mean Overall Score | | 3.83 |

**Result: The Score for this Course is 3.8 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester IV** **Hours/Week: 6**
**17UST430404B** **Credits: 5**

**Allied: ACCOUNTANCY-II**

**Course Outcomes:**

After completing the course , the student will be able to

1. Understand the basic principles of cost accounting and prepare cost sheet.
2. Prepare cash flow statement as per AS3.
3. Determine working capital of a business organisation.
4. Apply Marginal costing principles in decision making.
5. Draft different kinds of budgets for a business organization.

**Unit-I:** **(18 hours)**

Cost Accounting – Components of cost – Methods and techniques of Costing -Preparation of cost sheet – various stages in cost sheet –WIP - valuation of closing stock of finished goods - tender & quotation.

**Unit-II:** **(18 hours)**

Cash flow Statement – meaning – cash flow from operating activities, investment activities and financing activities - preparation of cash flow statement As per AS3 (simple problems

**Unit-III:** **(18 hours)**

Working capital management-Working capital meaning- Types of working capital - components of working capital - Calculation of working capital

**Unit-IV:** **(18 hours)**

Marginal costing – Marginal cost- Contribution –PV Ratio – BEP – Margin of safety –CVP-decision making (simple problems)

**Unit-V:** **(18 hours)**

Budgeting control- preparation of cash budget- sales budget- production budget- production cost budget- flexible budget

**Text Book:**

1. Reddy TS and Murthy A, Cost Accounting (2012), Margham Publications, Chennai (Unit-I, II, III, IV & V)

**Books for References**

1. S.N. Maheswari, (2007), Cost Accounting, S.Chand& Co, New Delhi.
2. Jain SP & Narang KL, (2014), Cost Accounting Principles and Practice, Kalyani Publishers, New Delhi.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UST430404B | | | | | Title of the Paper Allied: ACCOUNTS-II | | | | | | | | Hours 6 | Credits 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 3 | 4 | 2 | 2 | 4 | 3 | 4 | 1 | 4 | 2 | 4 | 3 | | 3.08 |
| CO2 | 5 | 4 | 5 | 3 | 2 | 5 | 3 | 5 | 3 | 3 | 5 | 2 | 3 | | 3.69 |
| CO3 | 4 | 5 | 3 | 2 | 5 | 3 | 1 | 2 | 5 | 3 | 2 | 4 | 3 | | 3.23 |
| CO4 | 3 | 4 | 2 | 4 | 2 | 5 | 2 | 4 | 3 | 2 | 4 | 5 | 4 | | 3.38 |
| CO5 | 5 | 2 | 5 | 2 | 4 | 4 | 5 | 3 | 2 | 5 | 4 | 5 | 4 | | 3.84 |
| CO6 | 5 | 3 | 5 | 2 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 5 | | 4.08 |
| CO7 | 3 | 5 | 3 | 4 | 3 | 1 | 1 | 3 | 5 | 2 | 3 | 5 | 4 | | 3.23 |
| CO8 | 5 | 4 | 5 | 4 | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 5 | | 4.15 |
| | | | | | | | | | | | | | Mean Overall Score | | 3.59 |

**Result: The Score for this Course is 3.5 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester IV** **Hours/Week: 2**
**17UFC441004A** **Credits: 2**

## FORMATION OF YOUTH-II

**Course Outcome**

1. To ensure preparing the students to live in harmony with nature.
2. To ensure the youth the significance of public health and the related issues.
3. To ensure sensitizing the youth about addictions and their consequences.
4. To ensure educating the youth on disaster management and First-Aid.
5. To ensure enlightening on the developmental issues and challenges of youth today.
6. To ensure the value of counselling for attaining positive mental health.

**Unit-I: Harmony with Nature**

What is environment, Why should we think of harmony, Longing for human well-being, Principles to conserve environmental resources, Causes of disharmony, The fruits of harmony with nature, Forest resources, Water resources, Mineral resources, Food resources, Fruits of dishormony, Economic values and growth, Environmental Ethics, Guidelines to live in harmony with nature, Towards life-centered system for better quality of life

**Unit-II: Public Health**

Health related issues, Health Care in India vs Developed Countries, Health and Heredity, Public Health - The Indian Scenario, Objectives of public health in India, Public Health System in India, Failure on the public health front, Role of the central government, Hospitals Services in India, Health and Abortion, Health and Drug Addiction, Drug abuse

**Unit-III: Disaster Management and First-Aid**

Disaster Management, Types of disaster, Plans of disaster management, Technology to manage natural disasters and catastrophes, Disaster Management, Rehabilitation and Reconstruction, Human-induced disaster, First Aid, The importance of First-aid, Disaster Declaration and Response

**Unit-IV: Issues Dealing with Science**

What is Science, Science and Religion, Social Relevance of Science and Technology, Science and technology for social justice, Difference caused by Science and Technology, Need for indigenous technology, Science, Technology and Innovation Policy of India, Harnessing the forces of science and technology for the future

**Unit-V: Counselling for the Adolescents**

High Risk Behaviours, Developmental Changes in Adolescents, Key Issues of the Adolescents, Need for Counselling, Nature of Counselling, Counselling Goals, Does helping help? The Good and the Bad news.

**Text Book:**


1. **Formation of Youth,** Department of Foundation course, St.Joseph's College, Tiruchirappalli-2, 2016.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UFC441004A | | | | | Title of the Paper FORMATION OF YOUTH-II | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 4 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 5 | 4 | | 4.4 |
| CO2 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | | 4.2 |
| CO3 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | | 4.2 |
| CO4 | 3 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | | 4.0 |
| CO5 | 2 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | | 4.3 |
| CO6 | 4 | 3 | 4 | 4 | 5 | 3 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | | 4.2 |
| | | | | | | | | | | | | | Mean Overall Score | | 4.2 |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester IV** **Hours/Week: 2**
**17UFC441004B** **Credits: 2**

## RELIGIOUS DOCTRINE-II

### Course Outcome

1. To ensure appreciation of the harmony of religion.
2. To ensure training the youth in the power of prayer.
3. To ensure the understanding of Mary's role in salvation history and Marian Dogmas.
4. To ensure enlightening the graces and invisible effects of the sacraments.
5. To ensure the youth with the promise that God forgives failings on repentance.
6. To ensure understanding the concept of salvation and the promise of eternal life.

### Unit: I Harmony of Religions

Introduction - Religions of India - Buddhism - Jainism - Sikhism - Judaism - Confucianism - Christianity - Zoroastrianism - Islam

### Unit: II The Christian Prayer

Prayer Defined - Reasons to pray - The Way to Pray - Types of Prayer - Obstacles for Prayer - Prayer in Old -The Lord's Prayer

### Unit: III Mary, the Blessed Virgin, Mother of God

Introduction - Marian Dogmas - Mary in need of Redemption - Mary in the New Testament - Apparitions of Mary - Devotion to Mary

### Unit: IV Sacraments of Initiation

Introduction - An Overview - Baptism - Confirmation - Holy Eucharist

Unit: V Sacraments of Healing & at the Service of the Community

Reconciliation - Anointing of the Sick - Holy Orders – Matrimony

### Text Book:

1. **Life in the Lord,** Department of Foundation course, St. Joseph's College, Tiruchirappalli-2, 2011.



**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester IV | Course Code 17UFC441004B | | | | | Title of the Paper RELIGIOUS DOCTRINE-II | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3.9 | |
| CO2 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3.9 | |
| CO3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 4.2 | |
| CO4 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3.9 | |
| CO5 | 4 | 1 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 3.8 | |
| CO6 | 4 | 1 | 4 | 3 | 3 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4.0 | |
| | | | | | | | | | | | | Mean Overall Score | | 3.9 | |

**Result: The Score for this Course is 3.9 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester V** **Hours/Week: 4**
**17UST530211** **Credits: 3**

## DESIGN OF EXPERIMENTS

**Course Outcomes:**

1. Know the basic principles of experimental design.
2. Learn the difference between one way and Two way ANOVA.
3. Understand the applications of CRD and LSD.
4. Know the factorial experiments.
5. Understand the classification of One way and Two way Analysis of variance.
6. Obtain the importance of Design of experiments in Quality control.

**Unit-I:**

**Fundamental Principle of Experiments**

Fundamental principles of experimentation – Randomization, Replication and Local control techniques. Uniformity trials – Transformation of data and its uses.

**Unit-II:**

**Analysis of Variance**

ANOVA – One way and two way classifications – Illustrations - Analysis of Variance for a one way layout and a two-way layout.

**Unit-III:**

**Analysis of Covariance**

ANCOVA– Analysis of Covariance - One way and two way classifications – Illustrations – Analysis of Covariance for one way layout and a two-way layout.

**Unit-IV:**

**Basic Designs**

Completely randomized experiments (CRD)-Randomized block designs(RBD)-Latin square designs(LSD)-Missing plot techniques- efficiency of the above designs.

**Unit-V:**

**Factorial Experiments**

Factorial experiments - $2^2$, $2^3$ and $3^2$ factorial designs-Confounding in $2^2$, $2^3$ and $3^2$ experiments.



**Textbook**

1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Applied Statistics, Sultan Chand & Co, 3rd ed, 2014.

**Reference Books**

1. Das, M.N. and Giri, N.C.: Design and analysis of Experiments,New age International Publication 2nd ed, 1987.
2. Doughlas, C. Montgomery: Design and analysis of Experiments, John Wiley & Sons, 8th ed., 2012.
3. Oscar Kempthrone: Design and analysis of experiments, John Wiley and Sons, 1952.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST530211 | | | | | Title of the Paper DESIGN OF EXPERIMENTS | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 5 | 5 | 4 | 2 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4.46 | |
| CO2 | 5 | 4 | 5 | 3 | 2 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 4.31 | |
| CO3 | 5 | 5 | 5 | 4 | 1 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 4.38 | |
| CO4 | 4 | 4 | 3 | 5 | 1 | 4 | 4 | 3 | 5 | 4 | 5 | 4 | 5 | 3.92 | |
| CO5 | 4 | 4 | 4 | 3 | 3 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 5 | 4.08 | |
| CO6 | 4 | 3 | 5 | 3 | 3 | 5 | 5 | 5 | 4 | 4 | 3 | 5 | 4 | 4.08 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.20 |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester V** **Hours/Week: 4**
**17UST530212** **Credits: 3**

**Practical:**

## STATISTICAL PACKAGES (SPSS)

**Course Outcomes:**

1. Formation of frequency distribution using SPSS.
2. Obtaining the Regression lines using SPSS.
3. Test the association between the attributes using SPSS.
4. Learn the solution of Non parametric methods using SPSS.
5. Learn the difference between the attributes and variables using SPSS.
6. Obtain the correlation coefficient using SPSS.

**List of Practicals:**

1. Formation of discrete and continuous frequency distributions - descriptive statistics.
2. Graphs and diagrams: Pie, bar, line and scatter diagrams- Histogram and Normal probability plot
3. Correlation coefficient rank correlation, partial and multiple correlations.
4. Regression : Simple and multiple linear regression.
5. Curve estimation.
6. Compare means: Independent sample test and paired t- test.
7. Cross tabulation and Chi-square – test.
8. One way and two way ANOVA – Factorial designs.
9. Non parametric test: Binomial tests, run test, sign test, Median test, Mann-Whitney test, Kruskal-Wallis, Kendall's and Friedman tests.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST530212 | | | | Title of the Paper Practical: STATISTICAL PACKAGES (SPSS) | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 5 | 4 | 3 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4.54 |
| CO2 | 5 | 3 | 4 | 5 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4.54 |
| CO3 | 4 | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 3.85 |
| CO4 | 5 | 5 | 4 | 4 | 1 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4.08 |
| CO5 | 5 | 5 | 5 | 4 | 2 | 4 | 4 | 3 | 5 | 4 | 3 | 5 | 4 | 4.08 |
| CO6 | 3 | 5 | 4 | 5 | 3 | 4 | | 4 | 4 | 3 | 5 | 4 | 3 | 3.92 |
| | | | | | | | | | | | | | Mean Overall Score | 4.16 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester V** **Hours/Week: 5**
**17UST530213** **Credits: 3**

## LINEAR MODELS, ECONOMETRICS & RANDOM PROCESSES

**Course Outcomes:**

1. Know the General linear hypothesis of full rank.
2. Understand the uses of Gauss Markoff theorem in Linear model.
3. Obtain the classification of Random processes.
4. Learn the difference between Auto correlation and cross.
5. Understand the Markov chains.
6. Obtain the importance of transition probability matrices.

**Unit-I: General Linear Model**

General Linear hypothesis model of full rank – point estimation under normal and non normal cases – Gauss Markov theorem.

**Unit-II: Econometrics**

Definition –Scope – Objective – Limitations – Divisions of Econometrics – Autocorrelation – Multicollinearity –Heteroscedasticity – Specification problem – Errors in variables .

**Unit-III: Classification of Random Processes**

Definition and examples - first order, second order, strictly stationary, wide-sense stationary and ergodic processes

**Unit-IV: Markov Process**

Markov process - Binomial, Poisson and Normal processes - Sine wave process – Random telegraph process.

**Unit-V: Auto Correlation and Spectral Densities**

Auto correlation - Cross correlation - Properties

**Textbooks**


1. Graybill, F.A.: An Introduction to linear Statistical Models – Vol. I (Chapters 3, 5 & 6, McGraw Hill, 1961.
2. Singh, S.P., Parashar, K. and Singh, H.P.: Econometrics, (Units IV & V) Sultan Chand & Co, 1980.
3. Ross, S., "A First Course in Probability", Fifth edition, Pearson Education, Delhi, 2014.

4. Peebles Jr. P.Z., "Probability Random Variables and Random Signal Principles", Tata McGraw-Hill Pubishers, Fourth Edition, New Delhi, 2011. (Chapters 6, 7 and 8).

**References**

1. Henry Stark and John W. Woods "Probability and Random Processes with Applications to Signal Processing", Pearson Education, Third edition, Delhi, 2011.
2. Veerarajan. T., "Probabilitiy, Statistics and Random process", Tata McGraw-Hill Publications, Second Edition, New Delhi, 2002.
3. Ochi, M.K., "Applied Probability and Stochastic Process", John Wiley & Sons, New York, 1990.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST530213 | Title of the Paper LINEAR MODELS, ECONOMETRICS & RANDOM PROCESSES | | | | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 5 | 4 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 4.23 |
| CO2 | 3 | 4 | 5 | 5 | 2 | 4 | 5 | 5 | 4 | 3 | 4 | 3 | 5 | 4.00 |
| CO3 | 5 | 5 | 4 | 3 | 2 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 4.15 |
| CO4 | 3 | 3 | 5 | 4 | 2 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 3.77 |
| CO5 | 4 | 4 | 4 | 3 | 1 | 4 | 4 | 4 | 5 | 3 | 4 | 4 | 3 | 3.62 |
| CO6 | 4 | 5 | 3 | 5 | 2 | 3 | 3 | 5 | 4 | 5 | 4 | 3 | 3 | 3.77 |
| | | | | | | | | | | | | | Mean Overall Score | 4.07 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester V** **Hours/Week: 5**
**17UST530214** **Credits: 3**

## OPERATIONS RESEARCH-I

**Course Outcomes:**

1. Know the different types of Operations Research models.
2. Obtain the role of Linear Programming Problem in real life problem.
3. Calculate the relationship between dual and primal problem.
4. Show the uses of Travelling sales man problem in marketing industry.
5. Know the role of Transportation problems in Transport company.
6. Know the importance of Assignment problems in a company.

### Unit-I: Nature of OR and LPP

Different types of models in OR, their construction and general methods of solution. Linear Programming: Introduction-Formulation of LPP- Graphical method and Simplex method.

### Unit-II: Degeneracy and unbounded solution

Two phase simplex method - The Big M method (Algorithms and Simple Problems only).

### Unit-III: Advanced Topics in LPP

Duality theory and its applications-Framing dual program- relationship between dul and primal problem-Dual simplex method (simple problems only).

### Unit-IV: Transportation Problem

Transportation problem - Linear programming formulation - Finding an Initial basic feasible solution by Northwest corner rule and Vogel's rule - Optimality - MODI method- Degeneracy.

### Unit-V: Assignment Problem

Assignment problem-Solving an assignment problem by Koney method (Hungarian)-Travelling Salesman Problem.

### Textbook


1. Kanti Swarup, Gupta, P.K. and Man Mohan: "Operations Research", Sultan Chand & Sons, New Delhi, 13th ed, 2014.


### Reference Books


1. Philips, D.T., Ravindran, A and Solberg, J.J.: "Operations Research-Principle and Practice", 2007.
2. Taha, H.A., "Operations Research – An Introduction", PHI, 2014.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST530214 | | | | | Title of the Paper OPERATIONS RESEARCH-I | | | | | | | | Hours 5 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 5 | 4 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4.54 | |
| CO2 | 4 | 5 | 5 | 3 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4.46 | |
| CO3 | 4 | 3 | 5 | 4 | 3 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 3.92 | |
| CO4 | 4 | 4 | 3 | 5 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4.46 | |
| CO5 | 3 | 5 | 5 | 4 | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 5 | 5 | 4.15 | |
| CO6 | 4 | 4 | 4 | 5 | 2 | 5 | 5 | 5 | 4 | 4 | 3 | 5 | 5 | 4.23 | |
| | | | | | | | | | | | Mean Overall Score | | | 4.29 | |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester V** **Hours/Week: 4**
**17UST530215** **Credits: 3**

## NUMERICALMATHEMATICS

**Course Outcomes:**

1. Understand the uses of interpolation in various fields.
2. Know the role of Picard's method for successive approximation.
3. Obtain the solution of algebraic equations.
4. Learn the usage of numerical differentiation and integration.
5. Learn the importance ofLagrange's problem in interpolation..
6. Know the role of Picard's method for successive approximation.

**Unit-I: Interpolation:** Interpolation – Symbolic relations – Newton's Forward and Backward difference formulae, Newton's divided difference (general) formula – Lagrange's formula.

**Unit-II: Central Difference Formulae:** Gauss forward and backward formulae-Stirling's formula-Bessel's formula-Everett's formula-Appropriateness of formulae.

**Unit-III: Inverse Interpolation:** Inverse Interpolation: Method of successive approximation - Picard's method of successive approximation - Lagrange's formula applied inversely

**Unit-IV: Solutions of Algebraic Equations:** Bisection method, Regula falsi method and Newton-Rapson method.

**Unit-V: Numerical Differentiation and Integration:** Numerical differentiation: Numerical differentiation up to second order maxima and minima of a tabulated function. Numerical integration: Trapezoidal rule - Simpson's one third and three eighth rules - Weddle's rule.

**Textbooks**


1. P. Kandasamy, K. Thilagavathy, K. Gunavathi - Numerical Methojds , S. Chand Company Ltd, New Delhi, 2006.
2. Sastry.S.S. :Introductory Methods of Numerical Analysis, PHI, 2012.


**Reference Books**


1. Gerald, C.F. and Wheatley, P.O.: Applied Numerical Analysis, Addison-Wesley, 2007.
2. Atkinson. K, Elementary Numerical Analysis, John Wiley & Sons, 2003.




**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST530215 | | | | | Title of the Paper NUMERICAL MATHEMATICS | | | | | | | | Hours 4 | Credits 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 5 | 5 | 4 | 2 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | | 4.46 |
| CO2 | 3 | 3 | 5 | 4 | 3 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | | 4.23 |
| CO3 | 5 | 4 | 5 | 3 | 1 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | | 4.23 |
| CO4 | 5 | 3 | 3 | 3 | 2 | 5 | 4 | | 3 | 4 | 3 | 4 | 5 | | 3.67 |
| CO5 | 5 | 3 | 4 | 5 | 1 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 3 | | 3.92 |
| CO6 | 3 | 5 | 4 | 5 | 1 | 4 | 4 | 4 | 5 | 5 | 3 | 5 | 4 | | 4.00 |
| | | | | | | | | | | | Mean Overall Score | | | | 4.08 |

**Result: The Score for this Course is 4.08 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester V** **Hours/Week: 4**
**17UST540302** **Credits: 4**

**Core Elective-I (WS):**
**ACTUARIAL STATISTICS**

**Course Outcomes:**

1. Learn the accumulate value and present value.
2. Obtain the redemption of loans.
3. Role of probability distributions general insurance.
4. Understand the Force of mortality..
5. Select the mortality table.
6. Know the importance of mortality tables.

**Unit-I:**

Accumulated value and present value of a sum under fixed and varying values of interest. Nominal and effective values of interest – Annuity – Classifications of annuities – Present accumulated values of annuities – Immediate annuity due and deferred annuity.

**Unit-II:**

Redemption of loans – Redemption of loans by installments payable times in a year interest being p.a. effective. Role of probability distribution in general insurance (Weibull, Exponential).

**Unit-III:**

Vital Statistics – meaning and uses of vital statistics – Measures of mortality – C.D.R., S.D.R., A.S.D.R. – Central mortality rate – Force of mortality – measures of fertility – C.B.R., G.F.R., A.S.F.R., T.F.R., G.R.R. and N.R.R.

**Unit-IV:**

Mortality Table – Columns of mortality table – Completing an incomplete mortality table uses of mortality table – Expectation of life – Computing probabilities of survival and death using mortality tables – select mortality table – Ultimate mortality table – Aggregate mortality table.

**Unit-V:**

Principle of insurance – Assurance benefits – Types of assurance – Endowment assurance, pure endowment assurance, whole life insurance and temporary assurance – Premiums – Natural premium – Level premium – Net premium – Office premium – Bonus loading with profit and without profit – Policy value – Retrospective policy value and prospective policy value.

**Textbooks**


1. P.A. Navanitham: Business Mathematics and Statistics : Published by Jai publishers, Trichy. (Unit I and II), 2012.
2. Mathematical basis of Life Assurance (IC-81): Published by Insurance Institute of India, Bombay (Unit – V).
3. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Applied Statistics (for Sultan Chand & Co. 3rd Ed. (Unit – III and IV), 2014.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST540302 | | | | | Title of the Paper Core Elective-I (WS): ACTUARIAL STATISTICS | | | | | | | | Hours 4 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 3 | 5 | 3 | 2 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4.15 | |
| CO2 | 4 | 4 | 4 | 3 | 3 | 4 | 5 | 4 | 3 | 3 | 3 | 5 | 4 | 3.77 | |
| CO3 | 3 | 5 | 3 | 3 | 3 | 5 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 4.00 | |
| CO4 | 4 | 5 | 4 | 3 | 1 | 5 | 4 | 3 | 4 | 5 | 3 | 5 | 3 | 3.77 | |
| CO5 | 5 | 5 | 5 | 4 | 2 | 5 | 4 | 3 | 4 | 5 | 5 | 4 | 5 | 4.31 | |
| CO6 | 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 4.23 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.03 |

**Result: The Score for this Course is 4.0 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester V** **Hours/Week: -**
**17UST540216** **Credits: 2**

**Self-Paced Learning:**

**DATA ANALYSIS USING 'R' (Online Course)**

**Course Outcomes:**

1. Formation of built – in functions using R.
2. Obtaining the solutions of probability distributions lines using R.
3. Find the relation between the variables using R.
4. Learn the importance of inference procedure for correlation.
5. Know the graphics in R
6. Obtain the role of scatter diagrams using R.

**Unit-I: Introduction to R**

R as a Statistical Software and Language – R as a Calculator – R Preliminaries – Methods of Data Input – Data Accessing or indexing – Built-in Functions.

**Unit-II: Graphics**

Graphics With R - Graphics Functions – Saving, Storing and Retrieving Work – Diagrammatic Representation of Data – Graphical Representation of Data – Measures of Central Tendency and Dispersion.

**Unit-III: Probability and Probability Distributions**

Probability: Definition and Properties – Probability Distributions – Some Special Discrete Distributions

**Unit-IV: Correlation:**

Introduction – Correlation – Types of Correlation – Scatter Diagram-Coefficient Correlation and its Properties – Computation of Correlation Coefficient - Inference Procedures for Correlation Coefficient.

**Unit-V: Regression Analysis:**

Linear Regression – Linear Regression Model –Model Assumptions – Linear Calibration - Inference Procedures for Simple Linear Model - Validation of Linear Regression Model.

**Books for Study:**

1. Sudha G. Purohit, Sharad D. Gore, Shailaja R. Deshmukh, "Statistics Using R", Narosa, Publishing House Pvt. Ltd., 2nd Ed., 2015.

**Books for Reference**

1. John Maindonald and John Braun. "Data Analysis and Graphics Using R". Cambridge University Press, Cambridge, 2010.
2. Brian Everitt and TorstenHothorn. "A Handbook of Statistical Analyses Using R". Chapman & Hall/CRC, Boca Raton, FL, 2009.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST540216 | Title of the Paper: Self-Paced Learning: DATA ANALYSIS USING 'R' (Partial On-line Course) | | | | | | | | | | | Hours - | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 3 | 5 | 4 | 5 | 2 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4.46 |
| CO2 | 5 | 3 | 4 | 4 | 3 | 5 | 3 | 4 | 5 | 3 | 4 | 5 | 5 | 4.08 |
| CO3 | 4 | 4 | 5 | 3 | 3 | 5 | 4 | 3 | 5 | 4 | 5 | 4 | 5 | 4.15 |
| CO4 | 4 | 4 | 4 | 3 | 1 | 4 | 3 | 5 | 4 | 4 | 5 | 3 | 3 | 3.62 |
| CO5 | 5 | 5 | 5 | 3 | 2 | 4 | 5 | 5 | 5 | 3 | 5 | 4 | 5 | 4.31 |
| CO6 | 4 | 5 | 3 | 5 | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 4 | 3.92 |
| | | | | | | | | | | | | | Mean Overall Score | **4.09** |

**Result: The Score for this Course is 4.0 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester V** **Hours/Week: 2**
**17UST540601** **Credits: 2**

## Skill Based Elective-I (BS):
## DATA ANALYSIS FOR COMPETITIVE EXAMINATIONS

**Course Outcomes:**

1. Know the role of apptidue in competitive examinations.
2. Learn profit and problems.
3. Draw the tabulation of data..
4. Learn the importance of combined averages.
5. Understand the use of Compound interest.
6. Obtain the importance of Tabulation of data.

**Unit-I:**

Algebraic simplification – Bodmas rule – Ratio and Proportions, Percentages.

**Unit-II:**

Averages – combined averages – Simple interest & Compound interest.

**Unit-III:**

Profit and loss – time and work.

**Unit-IV:**

Graph Reading – Number Series.

**Unit-V:**

Tabulation of data.

**Textbook**

1. R.S. Aggarwal, "Quantitative Aptitude", S. Chand & Co., New Delhi, 2017.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester V | Course Code 17UST540601 | Title of the Paper Skill-Based Elective (BS): DATA ANALYSIS FOR COMPETITIVE EXAMINATIONS | | | | | | | | | | | Hours - | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 4 | 5 | 3 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 5 | 4 | 3 | 4.15 |
| CO2 | 5 | 3 | 4 | 5 | 2 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 5 | 4.15 |
| CO3 | 4 | 3 | 5 | 4 | 2 | 5 | 4 | 3 | 5 | 5 | 4 | 3 | 3 | 3.85 |
| CO4 | 3 | 3 | 5 | 4 | 1 | 4 | 5 | 3 | 5 | 3 | 4 | 3 | 5 | 3.69 |
| CO5 | 4 | 5 | 5 | 4 | 2 | 5 | 5 | 5 | 4 | 3 | 5 | 4 | 5 | 4.31 |
| CO6 | 4 | 4 | 3 | 5 | 2 | 5 | 4 | 5 | 3 | 5 | 4 | 3 | 5 | 4.00 |
| | | | | | | | | | | | | Mean Overall Score | | 4.02 |

**Result: The Score for this Course is 4.0 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester V** **L P C**
**17USS540701A** **2 - 2**

## Inter Departmental Courses (IDC): SOFT SKILLS

***Course Outcomes***

1. To augment the level of confidence in articulation oif the students in their communication.
2. To ensure that the students learn to speak and interact with one another as social beings
3. To equip them and train to present the best of themselves as job seekers.
4. To equip with conversation techniques, presentation skills and grooming
5. To prepare them write their own resume and enhance their interview skills required by employers
6. To ensure that the students learn the parameters of group dynamics a key component of conversation

***Module I***

**Basics of Communication: D**efinition of communication, Barriers of Communication, Grooming, Presentations & Practicum.

***Module II***

**Resume Writing & Interview Skills:** Resume Writing: What is resume? Types of Resume - Chronological, Functional and Mixed Resume**,** Steps in preparation of Resume. **Interview Skills:** Preparation

***Module III***

**Group Discussion: Basics of G**roup Discussion, Parameters of GD, Essential Points for GD preparation, and GD Topics and Practicum.

***Module IV***

**Personal Effectiveness:** Self Discovery; and Goal Setting; Questioneers & Presentations for interview, Common interview questions, Attitude, Body Language, The mock interviews and Practicum

***Module V***

**Numerical Ability:** Calendar, Average, Percentage; Profit and Loss**,** Simple Interest, Compound Interest; Time and Work, Pipes and Cisterns; Time and Distance**,** Problems on Trains**,** Boats and Streams; Ratios and Proportions.

*Module VI*

**Test of Reasoning - Verbal Reasoning:** Series Completion, Analogy; Data Sufficiency, Assertion and Reasoning; and Logical Deduction. **Non-Verbal Reasoning:** Series; and Classification

**Textbook**


1. JASS, 2016. *Straight from the traits: Securing the soft skills*. St.Joseph's College, Trichy


**References**


1. Aggarwal, R.S. 2010. *A Modern Approach to Verbal and Non Verbal Reasoning*. S.Chand, New Delhi.
2. Aggarwal, R.S. 2001. Quantitative Aptitude. S.Chand. New Delhi
3. Covey, Stephen. 2004. *7 Habits of Highly effective people,* Free Press. Egan, Gerard. (1994). *The Skilled Helper* (5th Ed). Pacific Grove, Brooks/ Cole.
4. Khera ,Shiv 2003. *You Can Win.* Macmillan Books , Revised Edition.
5. Murphy, Raymond. 1998. *Essential English Grammar*. 2nd ed., Cambridge University Press. Sankaran, K., & Kumar, M. *Group Discussion and Public Speaking*. M.I. Pub, Agra, 5th ed., Adams, Media.
6. Trishna's 2006. *How to do well in GDs & Interviews*, Trishna Knowledge Systems.
7. Yate, Martin. 2005. H*iring the Best: A Manager's Guide to Effective Interviewing and Recruiting*


**Evaluation Pattern**

| Modules | Topic | Examination Pattern | |
|---|---|---|---|
| | | CIA | Online |
| I | Basics of Communication | 15 | 5 |
| II | Resume Writing & Interview Skills | 15 | 5 |
| III | Group Discussion | 10 | 10 |
| IV | Personal Effectiveness | 10 | 10 |
| V | Numerical Ability (Common Session) | - | 10 |
| VI | Test of Reasoning (Common Session) | - | 10 |
| | Total | **50** | **50** |

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**Semester V** **Hours/Week: 2**
**17USS540701B** **Credits: 2**

**Inter Departmental Courses (IDC):**
**NATIONAL CADET CORPS**

**Course Outcomes**

1. NCC 'C' and 'B" certificates are very much useful and increase credit marks in UPSC and SSB examinations..
2. They learnt discipline punctual and leadership quality.
3. They got physical fitness for Army and Police selection.
4. They learnt general knowledge find political issue.
5. They got trained for social service and volunteers for disaster.
6. They will be the best citizens of India.

**Unit-I: About NCC - Personality Developmet - Self Awareness** (6 hours)

NCC Aims and objectives of NCC - Organization and training and NCC song Incentives for cadets in NCC - NCC ranks Religion, culture , traditions and customs of India.- National integration – importance and necessity - Freedom struggle and nationalist movement in India - Personality development - Introduction to personality development - Factors influencing / shaping personality – Physical , social, psychological and philosophical Self awareness – know yourself / insight . - Change your mindset.

**Unit-II: Interpersonal Relationship and Communication - NDMA** (6 hours)

Interpersonal relationship and communication - Communication skills Leadership traits - Types of leadership Attitude – assertiveness and negotiation - Time management - Effects of leadership with historical examples - Stress management skills - Interview skills - Conflict motives.- Importance of group – team work - Disaster Management - Civil defence organization and its duties – NDMA Types of emergencies / natural disasters- Assistance during natural / other calamities / floods / cyclone / earth quake / accident - Setting up of relief camp during disaster Management - Collection and distribution of aid material .

**Unit-III: Social Awareness and Community Development - Hygiene and Sanitation** (6 hours)

Social awareness and community development - Basics of social service-weaker sections of our society and their needs - Health and Hygiene Structure and functioning of the human body - Hygiene and sanitation- Physical and mental health - Infectious and contagious diseases and its prevention -

Basic of home nursing and first aid in common medical emergencies - Wounds and fractures - Introduction to yoga and exercises

**Unit-IV: Air-Wing** (6 hours)

Principles of flight – Elementary Mechanics – Atmosphere - Venturi effect and Bernauli's theorem - Glossary of terms; Aero engines – Aero-engine components; Aircraft components – Airframe structure; Metereology – Importance of Metereology in Aviation; Air Navigation – Why a pilot should study Navigation; Airmanship – Airmanship; Aeromodelling – History of Aeromodelling – Materials used in Aeromodelling – Types of Aeromodels.

**Unit-V: Naval** (6 hours)

Naval orientation - history of Indian Navy – Navy head quarters commands fleets- ships shore establishment war ships and their role - induction to Anti submarine warfare.- Types of war ships - types anchor parts of anchor - GPS RACON RADAR - types of firewater making in the ships- NBCD organization and structure - Damage flooding.

**Text Book**

1. Cadet's hand book published by the Directorate General, National Cadet Corps, Ministry of Defence, R. K. Puram, New Delhi 110022, 2008.

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**Semester VI** **Hours/Week: 7**
**17UST630217** **Credits: 4**

## 'R' LANGUAGE - PRACTICAL

**Course Outcomes**:

1. Formation of frequency distribution using R.
2. Obtaining the Regression lines using R
3. Test the association between the attributes using R
4. Learn the solution of Non parametric methods using R
5. Understand the cross tabulation and Chi-square test.
6. Formation of frequency distribution using R.

**Exercises:**

1. Formation of discrete and continuous frequency distributions descriptive statistics.
2. Graphs and diagrams: Pie, bar, line and scatter diagrams - Histogram and Normal probability plot.
3. Correlation coefficient rank correlation, partial and multiple correlations.
4. Regression: Simple and multiple linear regression.
5. Curve estimation.
6. Compare means: Independent sample test and paired t- test.
7. Cross tabulation and Chi-squre – test.
8. One way and two way ANOVA – Factorial designs.
9. Non parametric test: Binomial tests, run test, sign test, Median test, Mann-whitney test, Kruskal-Wallis, Kendall's and Fried man tests.

**Textbook**

1. Brian Everitt and Torsten Hothorn. "A Handbook of Statistical Analyses Using R". Chapman & Hall/CRC, Boca Raton, FL, 2006. ISBN 1-584-88539-4.

**Reference Books**

1. William N. Venables and Brian D. Ripley. "Modern Applied Statistics with S". Fourth Edition, Springer, New York, 2002. ISBN 0-387-95457-0.
2. John Maindonald and John Braun. "Data Analysis and Graphics Using R". Cambridge University Press, Cambridge, 2010.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester VI | Course Code 17UST630217 | | | | | Title of the Paper R-LANGUAGE – PRACTICAL | | | | | | | | Hours 7 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 5 | 4 | 5 | 3 | 2 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 4.31 | |
| CO2 | 4 | 5 | 5 | 4 | 1 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4.38 | |
| CO3 | 5 | 5 | 5 | 3 | 1 | 4 | 5 | 4 | 5 | 3 | 4 | 5 | 3 | 4.00 | |
| CO4 | 4 | 3 | 4 | 4 | 2 | 5 | 4 | 3 | 4 | 5 | 3 | 5 | 4 | 3.85 | |
| CO5 | 5 | 5 | 5 | 3 | 2 | 5 | 4 | 5 | 5 | 4 | 3 | 5 | 4 | 4.23 | |
| CO6 | 5 | 4 | 5 | 3 | 1 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 4.23 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.15 |

**Result: The Score for this Course is 4.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester VI** **Hours/Week: 7**
**17UST630218** **Credits: 4**

## ENGINEERING STATISTICS

**Course Outcomes:**

1. Understand the general theory of Control charts.
2. Know the attribute and variable control charts.
3. Obtain the acceptance sampling.
4. Prepare a reliability demonstration plan.
5. Learn the approach of Quality ISO9000 standards.
6. Learn the reliability systems applied in continuous probability distributions.

**Unit-I:**

**General Theory of Control Charts**

Concepts of Statistical Quality Control: Meaning-causes of variation process control-process capability-General theory for control charts- Analysis and evaluation of Control charts, Statistical toleranceing.

**Unit-II:**

**Attribute and Variable Control Charts**

Control Charts for variables-, R, s charts, run charts, revision of controls.Control charts for attributes-p,np,C charts-CUSUM control charts.

**Unit-III:**

**Acceptance Sampling**

Types of Inspection, Sampling vs 100% Inspection, Concepts of operating characteristics (OC) curves, Type A and Type B OC curves, AOQ, AQL, LTPD. Single Sampling Plan for attributes and variables, Double Sampling plan, Multiple Sampling Plan for Attributes – Concept - Published Sampling Plans MIL 105E.

**Unit-IV:**

**Reliability**

Concepts and measures, components and systems, coherent systems, reliability of systems-serial and parallel system Accelerated life testing, reliability estimate based on failure times, number of failures and stress strength analysis, reliability demonstration plan.

**Unit-V: Quality Systems and Quality Assurance**

Concepts of Quality Management-Inspection, Quality Control and Quality

Assurance. Systems approach for Quality-ISO9000 Standards-Implications and requirements. Quality Audits, Concepts of Total Quality Management.

**Textbooks:**


1. Gupta,S.C and Kapoor,V.K: Fundamentals of Applied Statistics Sultan Chand & Co., 2014.
2. Montgometry, D.C.: Statistical Quality Control, John Wiley and Sons, 2008.
3. Juran, J.M.: Quality Control Handbook, McGraw Hill, 1998.


**Reference Books:**


1. Mahajan : Statistical Quality Control, Dhanpatrai & Sons, 2010.
2. Mann, Schafer & Singpurwarla(1974): Methods for Statistical Analysis of Reliability & life data, John Wiley & sons, New York, 1974.
3. Feigunbaum, A.V.: Total Quality Control, 3rd Ed, McGraw Hill, 1991.
4. ISO 9000 standards: Issued by Bureau of India.


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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester VI | Course Code 17UST630218 | | | | | Title of the Paper ENGINEERING STATISTICS | | | | | | | | Hours 7 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 4 | 4 | 4 | 3 | 2 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4.23 | |
| CO2 | 3 | 3 | 3 | 4 | 2 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 3.85 | |
| CO3 | 5 | 5 | 5 | 4 | 1 | 5 | 4 | 3 | 5 | 4 | 5 | 5 | 4 | 4.23 | |
| CO4 | 5 | 3 | 5 | 4 | 2 | 5 | 4 | 4 | 5 | 4 | 5 | 3 | 4 | 4.08 | |
| CO5 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 4.23 | |
| CO6 | 3 | 5 | 4 | 5 | 2 | 5 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 4.08 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.11 |

**Result: The Score for this Course is 4.1 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester VI** **Hours/Week: 7**
**17UST630219** **Credits: 4**

## OPERATIONS RESEARCH-II

**Course Outcomes:**

1. Understand the role of Game theory in LPP.
2. Know the determination critical path.
3. Compute the deterministic inventory models.
4. Know the practical problems using sequencing problem.
5. Learn the difference between the deterministic and probabilistic inventory models.
6. Obtain the role of sequencing problems in software company.

**Unit-I:**

Theory of GamesGame theory Optimal solution of Two-person Zero-sum Games-Mixed strategies-Graphical solutions of(2x n) and ( m x 2) Games-Solution of m x n games by LPP.

**Unit-II:**

PERT – CPMArrow (Network) Diagram representations-determination of critical path-Determination of the floates - Probability considerations in project scheduling.

**Unit-III:**

Inventory models - Advantages of keeping inventories – Deterministic models with and without shortages – finite and infinite rate of replinishment – equal and unequal production runs probabilistic models without setup costs.

**Unit-IV:**

Queueing Theory - Basic elements of the queueing model. Role of the Poisson and Exponential distribution: Arrival process-Departure processes - Detailed study of (M/M/1) / (“/FIFO) models.

**Unit-V: Sequencing Problem**

Basic terms used in Sequencing- Processing of n jobs through two machines –Processing of n jobs through three machines – Processing of 2 jobs through k machines.

**Textbooks:**

1. Hamdy,A. and Taha : Operations Research, PHI, 2016.
   Unit 1: chapter 11 Unit 2 : Chapter 12 Unit 3 : Chapter 13 exclude 13.34, 13.3.5 & 13.4.3.Unit 4 : Chapter 15 Article (excluding 15.1,15.2 & 15.3), 15.3.3, 15.3.6 & 15.37.Chapter 16 Article 16.2 & 16.3
2. Philips, D.T., Ravindran, A and Solberg, J.J: Operations Research Principles and Practice, 2007.
   Unit 5: Chapter 9 Relevant article

**Reference Book:**

1. Kanti Swarup, Gupta,P.K. and Man Mohan : Operations Research, Sultan Chand & Co, 2010.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester VI | Course Code 17UST630219 | | | | | Title of the Paper OPERATION RESEARCH-II | | | | | | | | Hours 7 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | | |
| CO1 | 3 | 5 | 3 | 5 | 3 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 4.31 | |
| CO2 | 3 | 3 | 3 | 4 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4.23 | |
| CO3 | 4 | 4 | 5 | 3 | 3 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 5 | 4.15 | |
| CO4 | 5 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 5 | 3 | 4 | 5 | 5 | 4.23 | |
| CO5 | 3 | 3 | 3 | 5 | 2 | 4 | 5 | 3 | 5 | 4 | 4 | 5 | 3 | 3.77 | |
| CO6 | 4 | 4 | 4 | 5 | 2 | 4 | 5 | 4 | 5 | 4 | 4 | 3 | 5 | 4.08 | |
| | | | | | | | | | | | | | Mean Overall Score | | 4.12 |

**Result: The Score for this Course is 4.1 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$



**Semester VI** **Hours/Week: -**
**17UST630502** **Credits: 2**

## Additional Course: BIG DATA ANALYTICS

**Course Outcomes:**

1. Analysis of big data using statistics
2. Understand the Hadoop ecosystem
3. Find the tool for big data processing
4. Obtaining the data mining through statistics
5. Learn the basket analysis
6. Obtain the role of survival analysis in data analytics

**Unit-I:** Introduction - what is big data?– sources of big data – real time applicationof big data – sensitivity analysis using big data – challenges in collectingand validating big data .

**Unit-II:** Hadoop – Hadoop ecosystem for processing big data –Hadoop cluster-Hadoop distributed file system – working with files in HDFS – map reducetechnique for big processing – Joining data from different sources usingmap reduce.

**Unit-III:** Hive and pig – need for high-level tools in big data processing – unstructuredand structured data – Not Only SQL (NOSQL) commands – use of Hive asan interface to Hadoop – Use of pig as a programming Tool for big dataprocessing.

**Unit-IV:** Statistical techniques for data analysis – Hypothesis teaching – Regressionanalysis – Use of toolpak in excel for statistical techniques – Use of Python; language for high-level big data process tasks.

**Unit-V:** Data mining through statistics – data mining for marketing, sales and customerrelationship management – predictive modeling – nearest neighborapproach – survival analysis – automatic cluster deduction – market basketanalysis.

**Textbooks**


1. Multiple Authors, Big data analysis for Dummies, Dummies Press, 2011.
2. Multiple Authors, Hadoop Fundamentals, Packet Publications, 2012


**Reference Books**


1. Anurag Srivatsava, Hadoop Blueprints, PACKT, 2014
2. Dipayan Dev, DL with Hadoop, PACKT, 2015.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester VI | Course Code 17UST630502 | | | Title of the Paper Additional Course: BIG DATA ANALYTICS | | | | | | | | | Hours - | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 3 | 3 | 3 | 3 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 3 | 3.92 |
| CO2 | 4 | 4 | 5 | 3 | 2 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 3.92 |
| CO3 | 3 | 3 | 5 | 3 | 2 | 5 | 4 | 5 | 4 | 5 | 5 | 3 | 4 | 3.92 |
| CO4 | 5 | 5 | 4 | 3 | 2 | 5 | 4 | 4 | 5 | 4 | 5 | 3 | 5 | 4.15 |
| CO5 | 3 | 5 | 5 | 5 | 1 | 5 | 3 | 3 | 3 | 3 | 5 | 4 | 5 | 3.85 |
| CO6 | 5 | 5 | 5 | 4 | 2 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 4.31 |
| | | | | | | | | | | | | Mean Overall Score | | 4.01 |

**Result: The Score for this Course is 4.0 (High Relationship)**

*Note:*

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

*Values Scaling*:

| **Mean Score of COs** = $\frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$ | **Mean Overall Score for COs** = $\frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$ |
|---|---|



**Semester VI** **Hours/Week: 4**
**17UST630303** **Credits: 4**

## Core Elective-II (WS): APPLIED STATISTICS

**Course Outcomes:**

1. Learn the economic statistics.
2. Compute the different index numbers.
3. Learn the uses of Laspeyre's and Passche's and Fisher's index numbers in real life problems.
4. Study the functions of NSSO – CSO.
5. Learn the importance of good index number.
6. Understand the statistical system existing in india.

**Unit-I:**
**Time Series-1**

Concepts of time series – Components of time series – Additive and multiplicative models for the analysis of time series - Measurement of trend by (i) Graphic method, (ii) Semi Average method, (iii) Method of Curve Fitting by principle of least squares, (iv)Method of Moving Averages.

**Unit-II:**
**Time Series-2**

Measurement of Seasonal Variations by (i) Method of simple average, (ii) Ratio-to-trend method, (iii) Ratio-to-Moving Average Method, (iv) Link Relatives method. Measurement of Cyclic variations by residual approach. Random Component of a time series – Variate difference method.

**Unit-III:**
**Index Numbers-1**

Index numbers and their definitions, Construction and uses – Commonly used index numbers – Laspeyre's, Paasche's and Fisher's index numbers – Criteria of a good index number.

**Unit-IV:**
**Index Numbers-2**

Test for index numbers Time-reversal test, Factor – reversal test, Circular test. Fixed and Chain base index numbers – Cost of living index number – Base shifting, Splicing and Deflating of index numbers.

**Unit-V:**
**Official Statistics**

Statistical System in India - Official sources of Statistics – Functions of NSSO- CSO –Importance of Census- Census and data collection.

**Textbooks:**

1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Applied Statistics. Sultan Chand & Sons, 2014. (Units 1- IV)
2. Pillai RSN and Bagavathi V, Statistics, S. Chand & Co., 2010 (Unit V)

**Book for Reference**

1. Garret, H.E., Education and Psychological Statistics. Paragan International Publications, 2005.

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester VI | Course Code 17UST630303 | Title of the Paper Core Elective-II (WS): APPLIED STATISTIS | | | | | | | | | | | Hours 4 | Credits 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | Mean Score of COs | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 3 | 5 | 4 | 3 | 5 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 4.23 |
| CO2 | 4 | 3 | 3 | 5 | 2 | 4 | 5 | 3 | 5 | 4 | 3 | 5 | 4 | 3.85 |
| CO3 | 5 | 5 | 5 | 4 | 2 | 5 | 3 | 4 | 4 | 5 | 4 | 3 | 5 | 4.15 |
| CO4 | 5 | 5 | 5 | 4 | 1 | 5 | 4 | 3 | 3 | | 3 | 5 | 4 | 3.92 |
| CO5 | 5 | 3 | 5 | 5 | 3 | 5 | 5 | 4 | 5 | 3 | 5 | 4 | 5 | 4.38 |
| CO6 | 5 | 4 | 5 | 5 | 2 | 5 | 3 | 5 | 4 | 3 | 5 | 4 | 3 | 4.08 |
| | | | | | | | | | | | | | Mean Overall Score | 4.10 |

**Result: The Score for this Course is 4.0 (High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling:***

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \qquad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Semester VI** **Hours/Week: -**
**17UST630220** **Credits: 2**

**COMPREHENSIVE EXAMINATION**

**The aim is** :

* To enable the students to revise the entire syllabus.
* To train the students in solving multiple choice questions.
* To prepare the students for cracking the competitive examinations.

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**Semester VI** **Hours/Week: -**
**17UST630221** **Credits: 2**

**INTERNSHIP**

**The aim is**:

* To expose the students to the real work environment
* To train the students in using statistical concepts for solving real world problems.
* To train the students in Report Preparation.
* To explain the Practical utility in real life situations

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**Semester VI** **Hours/Week: 3**
**17UST630222** **Credits: 3**

**GROUP PROJECT**

**Course Outcomes:**

* To enable the students to apply the statistical techniques for solving real-life problems.
* A good project goes a long way in providing practical training to the students. They get an opportunity through the project to apply some of the vital theoretical concepts and techniques that had learnt in the previous Semesters.
* On most of the occasions, socio-economic survey and market research surveys are periodically conducted by government agencies, NGO's and private organizations. So, it is proposed to offer good project topics to the students in these practical areas. The students will be thoroughly trained through the project not only in scientific selection of sample for data collection, but also in identifying and applying approximate statistical techniques in their projects.
* The board evaluation strategy of the project will entitle the allocation of appropriate marks to the project report preparation and the remaining marks to the project viva-voce, as indicated below:
  **Project report evaluation: 60 marks; Project Viva: 40 marks**



**Semester VI** **Hours/Week: 2**
**17UST640602** **Credits: 2**

**Skill-based Elective-II (BS):**
**STATISTICS FOR MANAGEMENT**

**Course Outcomes:**

1. Obtain the measures of central tendencies
2. Learn the usage of skewness and kurtosis
3. Obtain the relationship between the two variables.
4. Find the association between the attributes
5. Obtain the measures of central tendencies
6. Understand the theory of attributes.

**Unit-I:**

Statistics - meaning and its uses, Measures of central tendency mean, median, mode.

**Unit-II:**

Dispersion – study about range, Standard Deviation and coefficient of variation, Skewness and Kurtosis.

**Unit-III:**

Relationship between two variables: the scatter diagram; correlation, rank correlation and the regression lines – The coefficient of determination – Theory of attributes.

**Unit-IV:**

Test of Significance - Large sample tests based on mean(s), proportion(s).

**UNIT-V:**

Small sample test based on means, variances, correlation coefficients – based on 't' and F-distributions. Applications of chi-square tests.

**Textbook**

1. Boot and Cox: Statistical Analysis for Managerial Decisions, 1974. (Relevant chapters).

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**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

| Semester VI | Course Code 17UST640602 | | | Title of the Paper Skill-based Elective-II (BS): STATISTICS FOR MANAGEMENT | | | | | | | | | Hours 2 | Credits 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Outcomes (COs) | Programme Outcomes (POs) | | | | | Programme Specific Outcomes (PSOs) | | | | | | | | Mean Score of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 | |
| CO1 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 3 | 5 | 5 | 4.54 |
| CO2 | 3 | 5 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 3 | 4 | 5 | 4 | 4.23 |
| CO3 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 5 | 3 | 4 | 4.38 |
| CO4 | 3 | 5 | 5 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 5 | 5 | 4.31 |
| CO5 | 3 | 3 | 3 | 4 | 3 | 4 | 5 | 3 | 5 | 5 | 3 | 4 | 5 | 3.85 |
| CO6 | 4 | 4 | 4 | 3 | 4 | 5 | 3 | 5 | 4 | 5 | 3 | 4 | 5 | 4.08 |
| | | | | | | | | | | | | | Mean Overall Score | 4.23 |

**Result: The Score for this Course is 4.2 (Very High Relationship)**

***Note:***

| Mapping | 1-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---|---|---|---|---|---|
| Scale | 1 | 2 | 3 | 4 | 5 |
| Relation | 0.0-1.0 | 1.1-2.0 | 2.1-3.0 | 3.1-4.0 | 4.1-5.0 |
| Quality | Very poor | Poor | Moderate | High | Very High |

***Values Scaling*:**

| **Mean Score of COs** = $\frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$ | **Mean Overall Score for COs** = $\frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$ |
|---|---|