Program Name	**: Diploma in Dress Designing & Garment Manufacturing**
Program Code	**: DD**
Semester	**: Second**
Course Title	**: Research Methodology & Statistics**
Course Code	**: 24206**

1. RATIONALE:

This subject will help students develop skills needed in conducting a research in their area of specialisation. It will also help students to learn principles of good scientific writing along with developing skills in selecting, computing, interpreting and reporting statistics.

2. COMPETENCY:

The aim of this course is to help the student to attain the industry identified competency through various teaching learning methods.

- **Perform academic research with professional ethics.**

3. COURSE OUTCOMES (Cos):

The students will be able to:

a. Identify types of research, their advantages & challenges.
b. Plan the research for identified problem & its objectives.
c. Apply relevant method for data collection.
d. Analyse data & write a report.

4. TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Credit (L+T+P)	Examination Scheme											
				Paper Hrs.	Theory						Practical					
					ESE		PA		Total		ESE		PA		Total	
L	T	P			Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
2	--	2	4	2	35	14	15*	00	50	20	25@	10	25	10	50	20

(*): Under the theory PA, Out of 30 marks, 10 marks are for micro-project assessment to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessment of the cognitive domain UOs required for the attainment of the COs.

*Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **ESE** - End Semester Examination; **PA** - Progressive Assessment*

5. COURSE MAP: (with sample COs, PrOs, UOs, ADOs and topics)

This course map illustrates an overview of the flow and linkages of the topics at various levels of outcomes (details in subsequent sections) to be attained by the student by the end of the course, in all domains of learning in terms of the industry/employer identified competency depicted at the centre of this map.
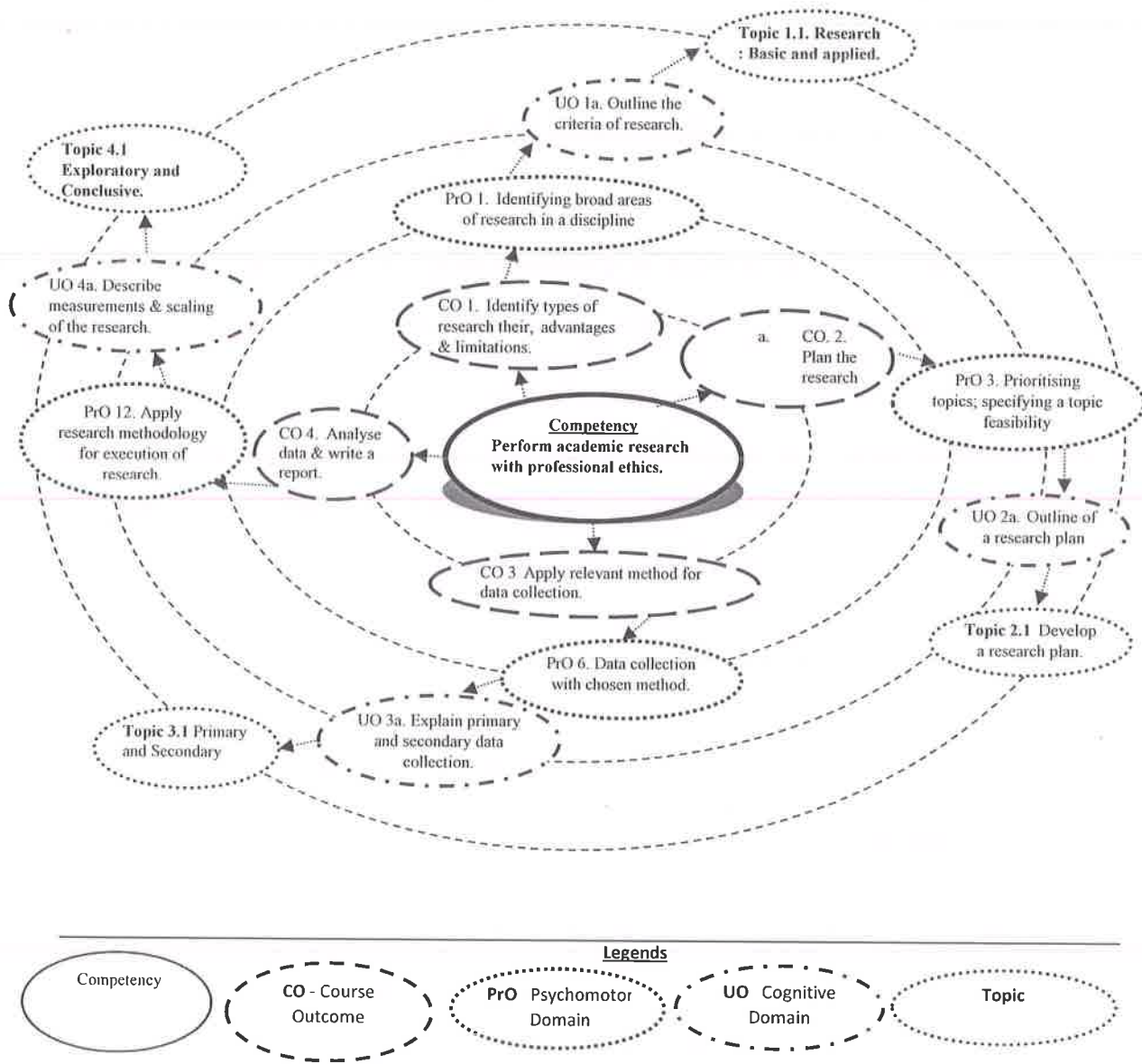
Figure 1 - Course Map

6. SUGGESTED PRACTICALS / EXERCISES

The practicals /exercises in this section are psychomotor domain LOs (i.e. sub components of the Cos) are to be developed and assessed so the students can attain the competency.

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1.	Identifying broad areas of research in a discipline.	I	2 hrs
2.	Identifying interest areas; using multiple search strategies.	I	2 hrs
3.	Prioritising topics; specifying a topic feasibility	II	2 hrs
4.	Review of literature/scholarly argument in support of study.	III	2 hrs
5.	Specifying research objectives/hypotheses/questions.	III	2 hrs
6.	Data collection with chosen method	III	2 hrs
7.	Select and apply sampling technique.	III	2 hrs
8.	Select research method and design list of activities for it.	III	2 hrs

9.	Collect raw material for conducting the research practically.	III	2 hrs
10.	Apply research methodology for execution of research.	IV	2 hrs
11.	Apply research methodology for execution of research.	IV	2 hrs
12.	Apply research methodology for execution of research.	IV	2 hrs
13.	Apply research methodology for execution of research.	IV	2 hrs
14.	Analyse data and record result along with statistical finding in text.	IV	2 hrs
15.	Analyse data and record result along with statistical finding in text.	IV	2 hrs
16.	Scientific writing of research.	IV	2 hrs
	Total		**32**

Note

i. *A suggestive list of PrOs is given in the above table. More such PrOs can be added to attain the COs and competency. A judicial mix of minimum 24 or more practical need to be performed, out of which, the practical marked as '*' are compulsory, so that the student reaches the 'Precision Level' of Dave's 'Psychomotor Domain Taxonomy' as generally required by the industry.*

ii. *The 'Process' and 'Product' related skills associated with each PrO is to be assessed according to a suggested sample given below:*

Sr. No.	Performance Indicators	Weightage in %
1	Introduction & Overview	10
2	Research Plan	25
3	Data Sources	30
4	Research Design	35
	Total	**100**

The above PrOs also comprise of the following social skills/attitudes which are Affective Domain Outcomes (ADOs) that are best developed through the laboratory/field based experiences:

a. Follow safety practices.
b. Demonstrate working as a leader/a team member.
c. Maintain tools and equipment.
d. Follow ethical Practices.

The ADOs are not specific to any one PrO, but are embedded in many PrOs. Hence, the acquisition of the ADOs takes place gradually in the student when s/he undertakes a series of practical experiences over a period of time. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

- 'Valuing Level' in 1st year
- 'Organizing Level' in 2nd year
- 'Characterizing Level' in 3rd year.

7. MAJOR EQUIPMENT / INSTRUMENTS REQUIRED:

The major equipment with broad specification mentioned here will usher in uniformity conduct of experiments, as well as aid to procure equipment by authorities concerned.

S. No.	Equipment/Instruments/Other resources name with Broad Specifications	PrO. No.
1.	Computers with internet	All
2.	Printer	All
3.	Software for data analysis	All
4.	Eg SPSS	All

8. UNDERPINNING THEORY COMPONENTS:

The following topics / subtopics should be taught and assessed in order to develop Los in cognitive domain for achieving the Cos to attain the identified competency.

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub–topics
Unit – I Introduction and Overview.	1a. Outline the criteria of research. 1b. Explain advantages and challenges of research.	1.1 Research: Basic and applied. 1.2 Overview of research. 1.3 Advantages and Challenges
Unit– II Research plan	2a. Outline a research plan 2b. Analyse the research process and define a problem and its objectives.	2.1 Develop a research plan. 2.2 Research process • Define a problem • Define objectives
Unit– III Data Sourcing	3a. Explain primary and secondary data collection. 3b. Explain importance of referencing. 3c. Describe primary data collection. 3d. Differentiate various methods used for sampling and data collection. 3e. Design a questionnaire for data collection.	3.1 Primary and Secondary 3.2 Secondary : Literature review • why referencing and the process 3.3 Primary data : • Qualitative v/s Quantitative • Sampling and data collection • Questionnaire design
Unit– IV Research Report Writing	4a. Describe measurements & scaling of the research.	4.1 Exploratory and Conclusive.
	4b. Explain data analysis & write a report.	4.2 a Measurements • Frequencies & percentages • Computing & average measures of central tendencies (mean, median & mode). 4.2 b Scaling • Histograms & line graphs. • Discreet & continuous variables.

Note: To attain the COs and competency, above listed UOs need to be undertaken to achieve the *'Application Level'* and above of Bloom's *'Cognitive Domain Taxonomy'*

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction and Overview	6	2	2	4	8
II	Research Plan	8	3	4	0	7
III	Data Sourcing	8	2	4	4	10
IV	Research Report Writing	10	2	4	4	10
	Total	**32**	**9**	**14**	**12**	**35**

Legends: *R=Remember, U=Understand, A=Apply and above (Bloom's Revised taxonomy)*
Note: *This specification table provides general guidelines to assist student for their learning and to teachers to teach and assess with respect to attainment of LOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may vary from above table*

10. SUGGESSTED STUDENT ACTIVITES:

Other than the classroom and laboratory learning, following are the suggested student-related co-curricular activities which can be undertaken to accelerate the attainment of the various outcomes in this course:
   a.   Student will maintain a separate Journal for written practical.
   b.   Students will visit museums, libraries & surf the net for collecting secondary data.
   c.   Students will apply research methodology to perform projects.
   d.   Students shall collect data ethically.

11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES:

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:
   a. Guide student(s) in sourcing and collecting data.
   b. Show video/animation films pertaining to the subject.
   c. Provide necessary equipment's for the practical.

12. SUGGESTED MICRO PROJECTS:

Students shall conduct pilot studies before the main research.

13. SUGGESTED LEARNING RESOURCES:

Sr. No.	Title of Book	Author	Publication & ISBN No.
1	Statistical Concepts and Methods	Bhattacharyya, G.K. & Johnson, R.A. (1977)	New York: John Wiley. ISBN-9780471072041
2	Research methods in Behavioral sciences	Dwiwedi, R.S. (1997)	Delhi: Macmillan India. ISBN-9780333923979
3	Statistics for the Behavioral sciences	Gravetter, F.J. & Waillnau, L.B. (2002)	Belmont, CA: Wadworth/ Thomson Learning.

			ISBN-9788131521045
4	Foundations of Behavioral research	Kerlinger, F.N. & Lee. H.B. (2000)	Orlando, Florida: Harcourt. ISBN-9788122904765
5	The Psychology Research Handbook	Leong, F.T.L. & Austin, J.T. (Eds.) (1996)	New Delhi: Sage. ISBN-9780761930228

14. SUGGESTED SOFTWARE / LEARNING WEBSITES

   a.   socscidiss.bham..ac.uk/methodologies.html
   b.   http://libguides.usc.edu/writingguide/researchdesigns