

B Objectives

<p>1. Summary of the main learning outcomes for students enrolled in the course.</p> <ul style="list-style-type: none"> The aim of this course is to train and teach students practically the bases and principals of the design and analysis of experiments in order to be able to exercise the contents of this field in their actual life, and also to be able to pursue graduate studies.
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)</p>
<ul style="list-style-type: none"> Using modern and diverse text books and references.

C. Course Description

(Note: General description in the form to be used for the Bulletin or Handbook should be attached)

1 Topics to be Covered		
Topic	No of Weeks	Contact hours
Completely Randomized Design.	2	10
Model adequacy checking.	1	5
Contrasts and orthogonal contrasts.	2	10
Multiple comparisons of the means	2	10
Randomized Complete Block Design.	2	10
Latin Square Design.	2	10
Two and Three-Factors Factorial Design.	1	5
Two Levels Factorial Designs.	1	5
Confounding and Fractional Factorial Designs.	1	5

2 Course components (total contact hours per semester):			
Lecture: 70	Tutorial:	Practical/Fieldwork/Internship: 28	Other:

<p>3. Additional private study/learning hours expected for students per week. (This should be an average :for the semester not a specific requirement in each week)</p> <p>28 hours of computer usage.</p>

4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

a. Knowledge

(i) Description of the knowledge to be acquired

- **The knowledge of using computers to replace using statistical tables.**
- **The knowledge of how and when to use the various designs.**
- **The knowledge of using computers to analyse data instead of hand calculations.**

(ii) Teaching strategies to be used to develop that knowledge

- **Theoretically, clarifying the usage of the different designs.**
- **Clarifying how to analyse data using packages.**
- **Judging the appropriateness of the analyses to data as far as hypotheses are concerned.**
- **Discussing alternatives when hypotheses are not met.**

(iii) Methods of assessment of knowledge acquired

- **Discussions and raising questions during lectures.**
- **Cyclical quizzes.**
- **Homework assignments.**
- **Mid-term examinations.**
- **Final examination.**

b. Cognitive Skills

(i) Cognitive skills to be developed

- **Recognizing the appropriate designs for the appropriate experiments.**
- **Choosing the suitable model for the given design.**
- **Conducting the suitable analysis to the chosen model.**
- **Verifying the adequacy of the design to the given data.**
- **Reaching the appropriate conclusions from the used analysis.**

<p>(ii) Learning strategies to be used to develop these cognitive skills</p> <ul style="list-style-type: none"> • Imitation of the presentation using projection and computer. • Practice the findings in class and at home. • Utilizing notes and textbook to learn more.
<p>(iii) Methods of assessment of students cognitive skills</p> <ul style="list-style-type: none"> • Homework assignments. • Mid-term examinations. • Final examination.
<p>c. Interpersonal Skills and Responsibility</p>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <ul style="list-style-type: none"> • Working homework jointly and individually in class and out. • Study in groups and individually. • Encouraging students to ask questions any time during the lecture. • Give the students the chance to ask questions during office hours.
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <ul style="list-style-type: none"> • Simple explanation and giving examples when it is possible. • Clarification using questions. • Using real life examples when it is possible. • Encouraging curiosity in students.
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <ul style="list-style-type: none"> • Grading homework given in practical class. • Grading projects worked out collectively. • Incorporating into examinations topics that consume longer time of discussion than others.
<p>d. Communication, Information Technology and Numerical Skills</p>
<p>(i) Description of the skills to be developed in this domain.</p> <ul style="list-style-type: none"> • Encouraging students to use computers instead of calculators and tables. • Encouraging students to use computers in class and at home.
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • Using projector in explaining and clarifying designs and using computers in analyzing data. • Issuing assignments to students in order to be solved using computers. • Students Use computers to solve examination questions.

(iii) Methods of assessment of students numerical and communication skills

- **Using computer print outs as part of home works and examinations**
- **Encouraging students not to use hand solutions and tables.**

5. Schedule of Assessment Tasks for Students During the Semester

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Homework	Regularly	10%
2	First mid-term test	6/7	20%
3	Second mid-term test	11/12	20%
4	Final exam	14	50%

D. Student Support

1. Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)

- **Office hours: 4 hr/ week**

E Learning Resources

1. Required Text(s) <ul style="list-style-type: none">• - Design and Analysis of Experiments, D. C. Montgomery, John Wiley, 1984
2. Essential References <ul style="list-style-type: none">• Experimental Designs (2nd ed.) by W. G. Cochran John Wiley 1957
3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)
4-.Electronic Materials, Web Sites etc <ul style="list-style-type: none">• e-Books.• Electronic encyclopaedia.
5- Other learning material such as computer-based programs/CD, professional standards/regulations <ul style="list-style-type: none">• Different software.