



# Course Specification

— (Bachelor)

Course Title: **Sampling Techniques**

Course Code: **STAT 331**

Program: **Statistics**

Department: **Statistics and Operations Research**

College: **Sciences**

Institution: **King Saud University**

Version: **3**

Last Revision Date: **10-10-2024**

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## A. General information about the course:

### 1. Course Identification

<b>1. Credit hours: 3(2+0+2)</b>			
<b>2. Course type</b>			
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department
B.	<input checked="" type="checkbox"/> Required	<input type="checkbox"/> Elective	<input type="checkbox"/> Track
<b>3. Level/year at which this course is offered: (5<sup>th</sup>/3<sup>rd</sup>)</b>			
<b>4. Course general Description:</b>			
<p>The course is aimed to expose the students to the techniques of drawing representative samples from various populations and then preparing them on the mathematical formulations of estimating the population parameters based on the sample data. The students would also be exposed to the real-life applications of sampling techniques and estimation of parameters. Topics to be covered are determination of the sample size and selection of the sample, simple random sampling, stratified random sampling, cluster random sampling, and systematic random sampling.</p>			
<b>5. Pre-requirements for this course (if any):</b>			
STAT 215			
<b>6. Co-requisites for this course (if any):</b>			
NA			
<b>7. Course Main Objective(s):</b>			
<p>The objectives of this course are:</p> <ul style="list-style-type: none"> <li>• Understanding the basic ideas of sampling from an applied perspective.</li> <li>• Providing experience with real-life problems.</li> <li>• Choosing the suitable sampling scheme to some real data sets</li> <li>• Interpreting the statistical results and comparing the studied techniques.</li> <li>• Increasing the skill of using the statistical software R.</li> </ul>			

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4	Distance learning		



### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	30
5.	Others (specify)	
<b>Total</b>		<b>60</b>

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Understand the basic principles of underlying survey design and estimation	<b>K1</b>	<b>Lecture</b>	<b>Exams, homework</b>
1.2	Understand the methods of designing and selecting a sample from a population	<b>K3</b>	<b>Lecture</b>	<b>Exams, homework</b>
1.3	Knowing how to estimate finite population parameters, e.g. totals, means, and proportion for some standard sampling schemes.	<b>K2</b>	<b>Lecture</b>	<b>Exams, homework</b>
<b>2.0</b>	<b>Skills</b>			
2.1	Applying the right statistical methods and techniques to answer given questions and data.	<b>S1</b>	<b>Lecture</b>	<b>Exams, homework</b>





Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Interpreting the results and drawing conclusions.	S3	Lecture	Exams, homework
2.3	Ability to use R programming.	S2	Lecture, laboratory	Exams, homework
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Developing communication skills	V1	Lecture, laboratory	Exams, homework
3.2	Manage resources and time.	V2	Lecture, laboratory	Exams, homework
...				

### C. Course Content

No	List of Topics	Contact Hours
1.	Probability sampling	4
2.	Statistical preliminaries	4
3.	Simple random sampling: Estimation of means and totals	4
4.	Simple random sampling: Sample size determination	4
5.	Simple random sampling: Estimation of proportions	4
6.	Systematic random sampling: Estimation of means and totals	8
7.	Systematic random sampling: Estimation of proportions	4
8.	Stratified random sampling: Estimation of means and totals	4
9.	Proportion allocation and Neyman allocation	8
10.	Stratified random sampling: Estimation of proportions	4
11.	Cluster random sampling: Estimation of means and totals	8
12.	Cluster random sampling: Estimation of proportions	4
		<b>60</b>

### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First midterm	6 <sup>th</sup> /7 <sup>th</sup>	25
2.	Second midterm	12 <sup>th</sup> /13 <sup>th</sup>	25
3.	Homework and project	7 <sup>th</sup> -11 <sup>th</sup>	10
4.	Final exam	17 <sup>th</sup> /18 <sup>th</sup>	40

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).



## E. Learning Resources and Facilities

### 1. References and Learning Resources

<b>Essential References</b>	Singh, Ravindra, and Naurang Singh Mangat. Elements of survey sampling. Vol. 15. Springer Science & Business Media, 2013.
<b>Supportive References</b>	Sampling Methodologies with Applications, Poduri S.R.S. Rao. CHAPMAN & HALL/CRC
<b>Electronic Materials</b>	
<b>Other Learning Materials</b>	

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms Computer lab
<b>Technology equipment</b> (projector, smart board, software)	Smart board R programming
<b>Other equipment</b> (depending on the nature of the specialty)	

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of Students assessment	Quality committee	Indirect
Quality of learning resources	Instructor	Direct
The extent to which CLOs have been achieved	Course coordinator	Direct
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	DEPARTMENT COUNCIL/ PLANS COMMITTEE / ACADEMIC ACCREDITATION COMMITTEE (BACHELOR)
<b>REFERENCE NO.</b>	
<b>DATE</b>	//13-12-2024

