



Program Specification

Program Name: Bachelor of Science in Applied Statistics

Qualification Level: 6

Department: Mathematics and Statistics

College: Science

Institution: Imam Mohammad Ibn Saud Islamic University

A. Program Identification and General Information

| | |
|--|---------------------------|
| 1. Program Main Location | |
| Main Campus for the Male Section. | |
| 2. Branches Offering the Program: | |
| Branch 1. King Abdullah City for the Female Section. | |
| 3. Reasons for Establishing the Program: | |
| (Economic, social, cultural, and technological reasons, and national needs and development, etc.) | |
| <p>1. The implementation of the strategic objectives of the department and the college, as the idea of creating a program in statistics dates back to 2004. The name of the department from “Mathematics Department” to “Mathematics and Statistics Department” subject of the honorable Telegraphic Directive from the High Rank No. 54727 dated 18/11/1432 AH by approval.</p> <p>2. Responding to the needs and requirements of the labor market and job opportunities, as most of them - in the foreseeable future - revolve around Artificial Intelligence and digital infrastructure that are characterized by the flow of massive amounts of data and the multiplicity of its bases from digital applications and mobile devices. From here comes the importance of applied statistics as a pioneering specialty that includes planning for data collection, processing and analysis, interpreting them, drawing conclusions from the data, and identifying problems, solutions and opportunities using specialized software within the decision-making process in private companies and government institutions.</p> <p>3. Matching of the applied statistics specialty with the objectives of the Kingdom's 2030 vision.</p> | |
| 4. Total Credit Hours for Completing the Program: | (1٧٤ Credit Hours) |
| 5. Professional Occupations/Jobs: | |
| <ul style="list-style-type: none"> • 121117 – Statistics Manager. • 212003 – Statistician. • 212004 – Data Analyst. • 235906 – Academic Researcher • 331404 · ٤ – Practitioner Statistical Assistant. • 33140104 – Practitioner Statistical controller. • 331406 · ٢ – Medical statistical Technician. | |
| 7. Intermediate Exit Points/Awarded Degree (if any): | |
| <i>Intermediate exit points/awarded degree</i> | <i>Credit hours</i> |

| | |
|---|--|
| <p>The awarded degree is a Diploma in Statistics.</p> | <p style="text-align: center;">87</p> <p>After the completion of at least 87 credit hours where at least 31 hours should be from statistical courses (course code STA).</p> |
| <p style="text-align: center;">Professional Occupations/Jobs</p> <ul style="list-style-type: none"> • 331404 - Practitioner Statistical Assistant. • 331401 - Practitioner Statistical controller. • 331406 - Medical statistical Technician. | |

B. Mission, Goals, and Learning Outcomes

1. Program Mission:

The mission of the undergraduate program in Applied Statistics is to prepare students for participating in the economic and social development of the Kingdom of Saudi Arabia, and leading innovation in higher education in the field of Statistics and its applications.

2. Program Goals:

PG1. Exhibit positive attitudes and national and institutional values toward the applied statistics, in order to contribute to an increasingly dynamic society.

PG2. Think critically, master problem-solving skills and communicate clearly applied statistics concepts and their impact to solve real-life problems.

PG3. Maintain an essence of statistical knowledge in line with technological changes to provide a solid foundation for lifelong learning in the future.

PG4. Have an appropriate package of professional skills to ensure a productive career that uses statistics.

PG5. Develop the creative potential of the students through research.

4. Graduate Attributes:

1. Competent and well-equipped instructors to teach mathematics and statistics in college;
2. Prepared for statistics-oriented career in industry, business and public administration; and
3. Having the foundation for further research for a career as a research statistician in a whole range of application areas.

C. Curriculum

1. Curriculum Structure

| <i>Program Structure</i> | <i>Required/ Elective</i> | <i>No. of courses</i> | <i>Credit Hours</i> | <i>Percentage</i> |
|-------------------------------------|-------------------------------|-----------------------|-------------------------|-------------------|
| Institution Requirements | Required | 1 | 2 | 1.1% |
| | Elective | 9 | 18 | 10.3% |
| College Requirements | Required | 5 | 21 | 12.1% |
| | Elective | 0 | 0 | 0% |
| Program Requirements | Required | 26 | 111 | 63.8% |
| | Elective | 2 | 8 | 4.6% |
| Capstone Course/Project | - | 1 | 4 | 2.3% |
| Field Experience/ Internship | | 1 | 4 | 2.3% |
| Others | Elective | 2/3 | 6 | 3.5% |
| Total | | 47/48 | 174 | 100% |

* Add a table for each track (if any)

2. Program Study Plan

| <i>Level</i> | <i>Course Code</i> | <i>Course Title</i> | <i>Required or Elective</i> | <i>Pre- Requisite / Co- Requisite Courses</i> | <i>Credit Hours</i> | <i>Type of requirements (Institution, College or Department)</i> |
|--------------|------------------------|---------------------------------|-------------------------------------|---|-------------------------|--|
| Level 1 | MAT 1101 | Calculus (1) | Required | | 5 | College |
| | PHY 1101 | General Physics (1) | Required | | 5 | College |
| | ENG 1140 | English (1) | Required | | 3 | College |
| | | University Requirement (1) | Elective | | 2 | Institution |
| Level 2 | MAT 1102 | Calculus (2) | Required | MAT 1101 | 5 | Department |
| | CHE 1101 | General Chemistry (1) | Required | | 5 | College |
| | ENG 1195 | English (2) | Required | | 3 | College |
| | | University Requirement (2) | Elective | | 2 | Institution |
| Level 3 | MAT 1151 | Foundations of Mathematics | Required | | 5 | Department |
| | STA 1101 | Probability & Statistics (1) | Required | MAT 1102 | 4 | Department |
| | PHY 1102 | General Physics (2) | Required | PHY 1101, MAT 1101 | 4 | Department |
| | | University Requirement (3) | Elective | | 2 | Institution |
| | MAT 1203 | Calculus (3) | Required | MAT 1102 | 5 | Department |

| <i>Level</i> | <i>Course Code</i> | <i>Course Title</i> | <i>Required or Elective</i> | <i>Pre-Requisite / Co-Requisite Courses</i> | <i>Credit Hours</i> | <i>Type of requirements (Institution, College or Department)</i> |
|--------------|--------------------|--|-----------------------------|---|---------------------|--|
| Level 4 | MAT 1223 | Linear Algebra | Required | MAT 1151 | 5 | Department |
| | MAT 1241 | Math Software | Required | MAT 1102 | 3 | Department |
| | | University Requirement (4) | Elective | | 2 | Institution |
| Level 5 | STA 1202 | Probability & Statistics (2) | Required | STA 1101, MAT 1203 | 5 | Department |
| | MAT 1231 | Introduction to Differential Equations | Required | MAT 1102, MAT 1223 | 0 | Department |
| | CS 1249 | Computer Programming for Science | Required | MAT 1241 | 4 | Department |
| Level 6 | STA 1203 | Mathematical Statistics | Required | STA 1202 | 4 | Department |
| | STA 1261 | Nonparametric Statistics | Required | STA 1202 | 5 | Department |
| | MAT 1253 | Introduction to Operations Research | Required | MAT 1151 | 4 | Department |
| | QUR 1001 | Quran University Requirement (5) | Required | | 2 | Institution |
| Level 7 | STA 1331 | Statistical Inference | Required | STA 1203 | 5 | Department |
| | STA 1321 | Introduction to Regression | Required | STA 1203 | 4 | Department |
| | ECO 1100 | Principles of Economy | Required | | 3 | Department |
| | | Free course* | Elective | | | Institution |
| Level 8 | STA 1332 | Sampling Methods | Required | STA 1331 | 4 | Department |
| | STA 1341 | Statistical Software | Required | STA 1202, CS 1249 | 3 | Department |
| | MAT 1371 | Financial Mathematics (1) | Required | MAT 1102 | 4 | Department |
| | | University Requirement (6) | Required | | 2 | Institution |
| | | Free course* | Elective | | | Institution |
| Level 9 | STA 1322 | Time Series Analysis | Required | STA 1321 | 4 | Department |
| | STA 1351 | Introduction to Stochastic Processes | Required | STA 1202, MAT 1223 | 4 | Department |
| | STA 1363 | Categorical Data Analysis | Required | STA 1331 | 4 | Department |
| | | Free course* | Elective | | | Institution |
| Level 10 | STA 1425 | Analysis of variance | Required | STA 1321, MAT 1223 | 5 | Department |
| | | Elective Course (1) | Required | Depending on the elective course | 4 | Department |

| <i>Level</i> | <i>Course Code</i> | <i>Course Title</i> | <i>Required or Elective</i> | <i>Pre-Requisite / Co-Requisite Courses</i> | <i>Credit Hours</i> | <i>Type of requirements (Institution, College or Department)</i> |
|--------------|--------------------|-------------------------------------|-----------------------------|---|---------------------|--|
| | STA 1456 | Introduction to Bayesian Statistics | Required | STA 1331 | 4 | Department |
| | | University Requirement (7) | Elective | | 2 | Institution |
| Level 11 | STA 1428 | Multivariate Analysis | Required | STA 1425 | 5 | Department |
| | STA 1426 | Experimental Design | Required | STA 1425 | 4 | Department |
| | | Elective Course (2) | Required | <i>Depending on the elective course</i> | 4 | Department |
| | | University Requirement (8) | Elective | | 2 | Institution |
| Level 12 | STA 1497 | Field Training | Required | | 4 | Department |
| | STA 1499 | Graduation project | Required | | 4 | Department |
| | | University Requirement (9) | Elective | | 2 | Institution |
| | | University Requirement (10) | Elective | | 2 | Institution |

University Requirements courses from (1) to (10)

University Requirements courses (1)-(10) should be chosen from the following packages and the following the appropriate rules indicated inside the table:

| <i>Packages</i> | <i>Course Code</i> | <i>Course Name</i> | <i>Credit Hours</i> | <i>Rules</i> |
|---|---------------------|-------------------------------------|---------------------|---|
| Islamic knowledge and values | QUR 1001 | Quran | 2 | The student chooses two courses, one of which should be the Quran course. |
| | HAD 1001 | Studies in the Sunnah | 2 | |
| | JRS 1001 | Objectives of Shariah | 2 | |
| | IDE 1001 | Creed | 2 | |
| | JR 1001 | Jurisprudence of Worship and Family | 2 | |
| Historical, national, and social knowledge and values | HST 1001 | Studies in the Prophet's biography | 2 | The student chooses two courses. |
| | HST 1002 | National History | 2 | |
| | SOS 101 | Voluntary Work Skills | 2 | |
| | CUL 1001 CIS 101 | Jurisprudence of Rights and Duties | 2 | |

| <i>Packages</i> | <i>Course Code</i> | <i>Course Name</i> | <i>Credit Hours</i> | <i>Rules</i> |
|--------------------------------------|--------------------|------------------------------------|---------------------|----------------------------------|
| | GEO 1011 | Environment and Sustainable Growth | 2 | |
| Professional skills and labor market | RHB 1001 | Work Value and Ethics | 2 | The student chooses two courses. |
| | BUS 1001 | Innovation and Entrepreneurship | 2 | |
| | EDM 1001 | Leadership Skills | 2 | |
| | FIN 1001 | Financial Planning Skills | 2 | |
| | ENG 1001 | English Language Skills | 2 | |
| Communicative and personal skills | BC 1001 | Communications Skills | 2 | The student chooses two courses. |
| | ARB 1001 | Linguistic Skills | 2 | |
| | ART 1001 | Editing and Speech Skills | 2 | |
| | PSY 1001 | Mental Health | 2 | |
| | BIO 1001 | General Knowledge of Health Care | 2 | |
| Academic skills | TCM 1001 | University Education Skills | 2 | The student chooses two courses. |
| | RHE 1001 | Reading Skills | 2 | |
| | IT 1001 | Technical Skills | 2 | |
| | EDP 1001 | Thinking Skills | 2 | |
| | STA 1001 | Basics of Statistics | 2 | |

* Include additional levels if needed

** Add a table for each track (if any)

List of Elective Courses (1) and (2) in levels 10 and 11

| <i>Course Code</i> | <i>Course Title</i> | <i>Required or Elective</i> | <i>Pre-Requisite / Co-Requisite Courses</i> | <i>Credit Hours</i> | <i>Type of requirements (Institution, College, or Department)</i> |
|--------------------|---------------------------------|-----------------------------|---|---------------------|---|
| STA 1423 | Introduction to Econometrics | Elective | STA 1322 | 4 | Department |
| STA 1434 | Survival Analysis | Elective | STA 1331 | 4 | Department |
| STA 1438 | Reliability Theory | Elective | STA 1331 | 4 | Department |
| STA 1442 | Statistical Analysis with R | Elective | STA 1341 | 4 | Department |
| STA 1452 | Introduction to Queueing Theory | Elective | STA 1351 | 4 | Department |

| <i>Course Code</i> | <i>Course Title</i> | <i>Required or Elective</i> | <i>Pre-Requisite / Co-Requisite Courses</i> | <i>Credit Hours</i> | <i>Type of requirements (Institution, College, or Department)</i> |
|--------------------|---|-----------------------------|---|---------------------|---|
| STA 1454 | Probability theory | Elective | STA 1203 | 4 | Department |
| STA 1467 | Demography | Elective | STA 1331 | 4 | Department |
| STA 1471 | Quality Control | Elective | STA 1332 | 4 | Department |
| STA 1473 | Network Analysis | Elective | MAT 1253 | 4 | Department |
| STA 1481 | Selected Topics in Applied Statistics (1) | Elective | | 4 | Department |
| STA 1483 | Selected Topics in Applied Statistics (2) | Elective | | 4 | Department |
| STA 1465 | Discrete Simulation | Elective | STA 1202 | 4 | Department |
| MAT 1472 | Financial Mathematics (2) | Elective | MAT 1371 | 4 | Department |
| MAT 1474 | Actuarial Mathematics | Elective | MAT 1371 | 4 | Department |
| CS 1449 | Oriented Object Programming for Science | Elective | CS 1249 | 4 | Department |