هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Program Specifications
(Postgraduate Degree)

Program Name: Master of Science in Applied Statistics
Qualification Level : Master Degree
Department: Statistics
College: Science
Institution: University of Tabuk

Content

A. Program Identification and General Information

1. Program Main Location:			
Department of Statistics, Faculty of Science, University of Tabuk (Main Campus, Male, and Female Sections).			
2. Branches Offering the Program:			
None			
3. Reasons for Establishing the Program: This program will help to achieve the Kingdom's 2030 vision by graduating students who can contribute better in this field. Moreover, Research, if any, can also be oriented and provided to serve the NEOM projects. (Economic, social, cultural, and technological reasons, and national needs and development, etc.)			
The aim of the program is to enhance the ability of students in theoretical and applied statistics and equip them for work as a professional statistician. This program offers students the opportunity to build on their interests and learn how to apply their knowledge in the real world by analyzing and critically interpreting data, building statistical models of real situations, and using the most recent programming tools and statistical packages.			
4. System of Study			
	☐ Coursework & Thesis	☒ Coursework	
5. Mode of Study			
	☒ On Campus	☐ Distance Education	☒ Others
6. Educational and Research Partnerships (if any)			
- Partnership Arrangement: - Type of Partnership: - Duration of Partnership:			
7. Total Credit Hours for Completing the Program: (48 hours)			
8. Professional Occupations/Jobs:			
Students on this program will have excellent career prospects. Students will take up positions in general directorate of statistics, consulting firms, banks and in the public sector.			
9. Major Tracks/Pathways (if any):			
Major Track/Pathway	Credit Hours	Professional Occupations/Jobs (For each track)	

	(For each track)	
Master of Science in Applied Statistics	**48**	• Academic researcher (235906) • Statistical assistant (331404) • Senior Statistician (121117) • Statistician (212003)
10. Intermediate Exit Points/Awarded Degree (if any):		
Intermediate Exist Points/Awarded Degree		**Credit Hours**
1. Master's degree		**48**

B. Mission, Goals, and Learning Outcomes

1. Program Mission:

The program provides professional preparation for careers involving the use of data analysis to inform decisions. The program includes required courses providing a foundation in statistical methods and theory and explores a variety of statistical models and techniques for analyzing data and expertise in the use of statistical software packages is developed. This program encourages an active conversation about the role of a research perspective in the field of applied statistics and service of society in Tabuk region, particularly in terms of ethical issues prevalent in data analytics. Students complete a total of 42 units.

2. Program Goals:

- Develop the ability to work both independently and collaboratively on statistical problems.
- Develop awareness and understanding, at an advanced level, of statistical concepts and techniques in order to apply those to cross-sectional, time-series, longitudinal, multi-level, spatial and event-oriented data sets.
- Graduates will be able to understand basic theoretical and applied principles of statistics with adequate preparation to pursue a PhD or enter the job force as an applied statistician.
- Develop an advanced knowledge of probability, distributions, inference and stochastic processes, statistical modeling and analysis in order to solve problems in engineering, computing and communications sciences, natural and environmental sciences, health and social sciences, economics and finance.
- Communicate statistical concepts and analytical results clearly and appropriately to others; and employ theory, concepts, and terminology at a level that supports lifelong learning of related methodologies.
- Analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- Use innovation-based knowledge and creative methods including design of experiments analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
  Apply the knowledge of statistics, science, medicine and computer science to the analysis of complex data.

3. Relationship between Program Mission and Goals and the Mission and Goals of the Institution/College.

The vision and mission of the Program should be in alignment with the mission of the university, the faculty, department, and the vision of the kingdom of Saudi Arabia 2030.

4. Graduate Attributes:

This master program will equip students with:

- Have acquired advanced disciplinary knowledge and skills in statistics, and an ability to apply these in a range of contexts.
- Have the ability to demonstrate advanced independent critical enquiry, analysis and reflection.
- Have produced relevant computer output using standard statistical software and interpret the results appropriately.
- Have the ability to demonstrate a sophisticated awareness of ethical implications relevant to the use of data, and particularly "big data"
- Have the ability to demonstrate skills in the evaluation and synthesis of information from a range of sources.
- Ability to conduct independent research.

5.Program Learning Outcomes*

Knowledge and Understanding: Students will be able to	
K1	**State** clearly statistical reasoning, in designing studies (including practical aspects), in exploratory data analysis by graphical and other means, and in a variety of formal inference procedures
K2	**Recognize d**eeply the basic theoretical and applied principles of statistics with adequate preparation to pursue a PhD or enter the job force as an applied statistician
Skills: Students will be able to	
S1	**Apply** statistical theory and methods in a wide range of situations relevant to research and real problems arising in different sciences
S2	**Develop** technical skills in probability modeling and statistical inference with the practical application of statistical methods in their current or future employment.
S3	**Build** efficiently and independently practical statistical models for various statistical indicators in real-world data.
S4	**Use** and properly develop the existing tools, packages and statistical programming languages to suit data science problems across different applied domains.
S5	**Assess** critically the importance of the assumptions of statistical methods and models and the consequences of their violation.
Values: Students will be able to	
V1	Demonstrate integrity and professional and academic values when dealing with various community issues related to the field of statistics.

V2	Participate within groups of research and manage specialized tasks and activities in Statistics with high autonomy.

* Add a table for each track or Exit Points/Awarded Degree (if any)

C. Curriculum

1. Study Plan Structure

Program Structure		No. of Courses	Credit Hours	Percentage
Course	**Required**	12	36	75
	Elective	3	9	19
Graduation Project (if any)		1	3	6
Thesis (if any)				
Field Experience (if any)				
Others (....)				
Total		16	48	100

* Add a table for each track (if any)

2. Program Courses:

Level	Course Code	Course Title	Required or Elective	Prerequisite Courses	Credit Hours
Level 1	STAT1501	Statistical Computing	Compulsory		3
	STAT 1502	Probability theory	Compulsory		3
	STAT1503	Applied Regression Analysis	Compulsory		3
	STAT1504	Sampling Theory and Practice	Compulsory		3
Level 2	STAT1505	Statistical Inference	Compulsory	STAT1502	3
	STAT1506	Nonparametric Statistics Methods	Compulsory		3
	STAT1507	Design of Experiments	Compulsory	STAT1503	3
	STAT15**	Elective course 1	Elective		3

Level 3	STAT1601	Applied Bayesian Inference	Compulsory	STAT 1505	3
	STAT1602	Categorical Data Analysis	Compulsory	STAT1503	3
	STAT1603	Applied Time Series Analysis	Compulsory	STAT1503	3
	STAT16**	Elective course 2	Elective		3
Level 4	STAT1604	Multivariate Analysis	Compulsory	STAT1505	3
	STAT1605	Statistical Learning	Compulsory	STAT1503	3
	STAT1698	Project	Compulsory	Department Approval	3
	STAT16**	Elective course 3	Elective		3

* Include additional levels if needed
** Add a table for each track (if any)

3. Course Specifications
Insert hyperlink for all course specifications using NCAAA template

4. Program learning Outcomes Mapping Matrix
Align the program learning outcomes with program courses, according to the following desired levels of performance (I = Introduced P = Practiced M = Mastered)

a. **Core Courses**

Course code & No.		**Program Learning Outcomes**							
	Knowledge and understanding		**Skills**					**Values**	
	K1	**K2**	**S1**	**S2**	**S3**	**S4**	**S5**	**V1**	**V2**
STAT1501		**I**	**I**	**I**		**I**		**I**	
STAT1502		**I**	**P**	**P**			**P**	**I**	
STAT1503		**P**	**P**		**P**	**P**		**I**	
STAT1504	**P**	**P**	**P**	**P**			**P**	**I**	
STAT1505	**P**	**P**	**P**	**P**			**M**	**P**	
STAT1506		**M**	**M**	**M**		**M**		**P**	

STAT1507	**P**	**P**	**M**	**M**		**M**		**P**	
STAT1601	**P**	**M**	**M**	**M**		**M**		**P**	
STAT1602	**P**	**P**		**P**	**P**	**M**		**P**	
STAT1603	**P**	**M**	**M**	**M**		**M**		**P**	
STAT1604		**M**	**M**	**M**		**M**		**P**	
STAT1605	**P**	**M**	**M**	**M**	**M**	**M**		**P**	
STAT1698	**M**	**M**	**M**	**M**		**M**		**M**	**M**

b. Elective Courses

Course code & No.		**Program Learning Outcomes**							
	Knowledge and understanding		**Skills**					**Values**	
	K1	**K2**	**S1**	**S2**	**S3**	**S4**	**S5**	**V1**	**V2**
STAT1508	P	M	M	M		M	M	P	
STAT1509	P	P	P	P		P		P	
STAT1510	P	P	P	P	M	M		P	
STAT1606		P	M	M	M	M		P	
STAT1607		P	M	M		M		P	
STAT1608	P	P		M	M		P	P	
STAT1609	P	M	M	M	M			P	
STAT1610	P	M	M	M	M	M	M	P	

* Add a table for each track (if any)

5. Teaching and Learning Strategies to Achieve Program Learning Outcomes

Describe policies, teaching and learning strategies, learning experience, and learning activities, including curricular and extracurricular activities, to achieve the program learning outcomes.

- Lectures
- Group work (cooperative learning)
- Self-Learning
- Brainstorming
- Group discussion
- Research project and Presentations
- Collaborative and effective learning.

6. Assessment Methods for Program Learning Outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure achievement of program learning outcomes in every domain of learning.

- Quizzes
- Assignments
- Final exam
- Self-evaluation
- Research project
- Presentation

D. Thesis and Its Requirements -if any

1. Registration of the thesis:

(Requirements/conditions and procedures for registration of the thesis as well as controls, responsibilities and procedures of scientific guidance)

- Not applicable to this program.

2. Scientific Supervision:

(The regulations of the selection of the scientific supervisor and his/her responsibilities, as well as the procedures/ mechanisms of the scientific supervision and follow-up)

- Not applicable to this program.

3.Thesis Defense/Examination:

(The regulations for selection of the defense/examination committee and the requirements to proceed for thesis defense, the procedures for defense and approval of the thesis, and criteria for evaluation of the thesis)·

- Not applicable to this program.

E: Student Admission and Support

1. Student Admission and Transfer Requirements, and Courses Equivalency

- Applicants should be graduates of a university of recognized reputation and hold a bachelor's degree in Statistics, Mathematics or Engineering of recognized reputation, with the following considerations:
- The candidate should have a minimum GPA of (3.0 /5).
- Undergraduate General Aptitude Test: The applicant attains a minimum score of (70).
- English language test: score of 400 in TOFEL exam, or equivalent to that in the ILETS (3.5), STEP (52) or equivalent.
- Transcripts: A complete record of study from each university-level institution you have attended to date. Uploaded copies are considered unofficial; final, official copies will be required of admitted applicants
- Employed consent is needed to enrol for the program
- The enrollment for the program is open for Saudi students and Non-Saudi students.

2. Student Counseling Services
(academic, career, psychological and social)

The Dean faculty and the academic affairs of Students coordinate and promote initiatives concerned with important aspects of the student experience, such as advising, academic integrity, student discipline, student recognition programs.
Student Counseling Services strongly encourages all students to take steps to protect themselves and there's a counsellor who is available for students who are presenting with emergent needs during regular office hours.
The counsellor also has the following duties:

- Provide counselling and assistance to the poorly performed students
- Deal with the registration of students for various courses in every semester according to the program study plan and allotment of registered hours based on the average.
- Deal with withdrawal and postponement of the courses and discontinuation of the students according to the academic rules and regulations.
- Addressing students' discipline issues
- Submitting an activity periodical report by the chairman of the committee to the Dean of the faculty
- Informing students of available resources (library, classrooms, labs., etc.)
- Each course counsellor has definite office hours to be available for students.

3. Special Support

(low achievers, disabled, gifted and talented)

A coordination of the Postgraduate committee at the departmental level with the dean faculty of Science to address the following:

- Assess and identify the needs of students with special needs
- Address the needs of disabled students at the faculty
- Facilitate full participation of these students in the learning-teaching process by preparing specialized course materials, appropriate classroom settings, and individualized exam

arrangements that are appropriate for the specific needs of these students, as well as ensuring full accessibility to all facilities and educational environments on the faculty

Develop plans of action concerning the faculty's physical environment which may cause hindrances for disabled students and purchase equipment that will be necessary to implement those plans.

F. Teaching and Administrative Staff

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professors	Statistic	Applied Statistics		1	1	2
Associate Professors	Statistic	Applied Statistics		2	2	4
Assistant Professors	Statistic	Mathematical Statistics		6	6	12
Technicians and Laboratory Assistants	NA	NA		NA	NA	NA
Administrative and Supportive Staff	General	General		1	1	2
Others (specify)						

2. Professional Development

2.1 Orientation for New Teaching Staff

Describe briefly the process used for orientation of new, visiting and part-time teaching staff.

New Faculty member Orientation is an essential requirement for most new academic appointments. The objective of this orientation is to familiarize new teaching staff with the learning environment and provide opportunities for professional development, networking and collegiality. This orientation program takes the following shapes:

- Training on how to use the website of the University.
- How to access electronic services.
- Training on designing electronic courses and the e-mail services.
- Explanation of the administrative and financial affairs.
- Make them aware about rules and regulations of the master program in Statistics.
- The M.SC. Committee at the department will play a significant role in providing the new teaching staff with the available and essential information.

2.2 Professional Development for Teaching Staff

Describe briefly the plan and arrangements for academic and professional development of teaching staff (e.g., teaching & learning strategies, learning outcomes assessment, professional development, etc.)Effective learning and teaching occur when staff display a sound understanding and up-to-date knowledge of their subject. Qualified and dedicated staff are key to ensuring that higher education institutions fulfill their mission of teaching/learning, research, and community service.

- Based on the above, the teaching staff will be equipped with the necessary knowledge, skills and expertise to facilitate learning using processes and focusing on topics such as teaching/learning effectiveness, curriculum design, student evaluation, motivating students, technology-enabled learning, and problem-based learning.
- Finally, the teaching staff will be supported and encouraged to all aspects of improving research skills including writing funding proposals, design, data analysis, and writing journal articles.

G. Learning Resources, Facilities, and Equipment

1. Learning Resources.

Policies and Procedure for providing and quality assurance of learning resources (textbooks, references and other resource materials, including electronic and web-based resources, etc.)

To go through this course. Major facilities provided will be as follows:

- Smart classrooms
- Fully developed library
- Access to e-resources
- Access to electronic materials

Study material prepared by faculty members

2. Facilities and Equipment

Policies and Procedure for providing and quality assurance of Facilities and Equipment (Library, laboratories, medical facilities, classrooms, etc.).

The department also has a 30-seat classroom for small lectures. This classroom is equipped with web camera conferencing technology, a digital projector, a white board, and audio-visual equipment. The teaching and learning environment in the MSc. Program is enhanced through excellent correlation between required course offerings and the laboratory facilities. These integrated laboratory experiences offer students substantial opportunities for hands-on training and experience that makes their theoretical studies more meaningful. Instructional laboratories are spacious and equipped with instrumentation to perform advanced software packages and statistical analysis, specialist computer software, online resources, an extensive library and dedicated study areas.

3. Arrangements to Maintain a Healthy and Safe Environment (According to the nature of the program)

The department of Statistics is committed to have a safe, healthy environment for all the students, it will cooperate with the safety division established at the university of Tabuk.

H. Program Management and Regulations

1. Program Management

1.1 Program Structure

(including boards, councils, units, committees, etc.)

The master program in statistics is headed by the chairman of the department, and its organizational structure will be as follows

- Dean Faculty of Science
- Dean Postgraduate Committee
- Head Postgraduate Committee at the department
- Postgraduate Committee (members)
- Student Advisors
- Faculty Members

1.2 Stakeholders' Involvement

Describe the representation and involvement of stakeholders in the program planning and development. (students, professional bodies, scientific societies, alumni, employers, etc.)

Main stakeholders involved in this this program are:

Students.

R&D centers and scientific bodies.

Employers.

2. Program Regulations

Provide a list of related program regulations, including their link to the online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)

Complete set of program regulations and guidelines will be updated on the University's website.

I. Program Quality Assurance

1. Program Quality Assurance System

Provide online link to quality assurance manual

A detailed quality assurance guideline is available at the deanship of quality assurance at the University of Tabuk.

2. Program Quality Monitoring Procedures

The program follows and implements the National Commission for Academic Accreditation & Assessment (NCAAA) guidelines for quality assurance. AT the end of every academic year the quality assurance committee prepares a comprehensive report about the performance of the program during the academic year, KPIs analysis as well as action plans and recommendations. Reporting about courses delivery follows the NCAAA course report forms where every faculty member is required to fill in the report. After collecting all the course reports the department's council holds a meeting to discuss the program as well as the course reports and the final draft of the recommendations and action plans for the new academic year are.

3. Arrangements to Monitor Quality of Courses Taught by other Departments.

The department of physics will closely monitor course outcomes taught by faculty members from other departments in the same way we monitor courses taught by the faculty members within our department.

4. Arrangements Used to Ensure the Consistency between Main Campus and Branches (including male and female sections)

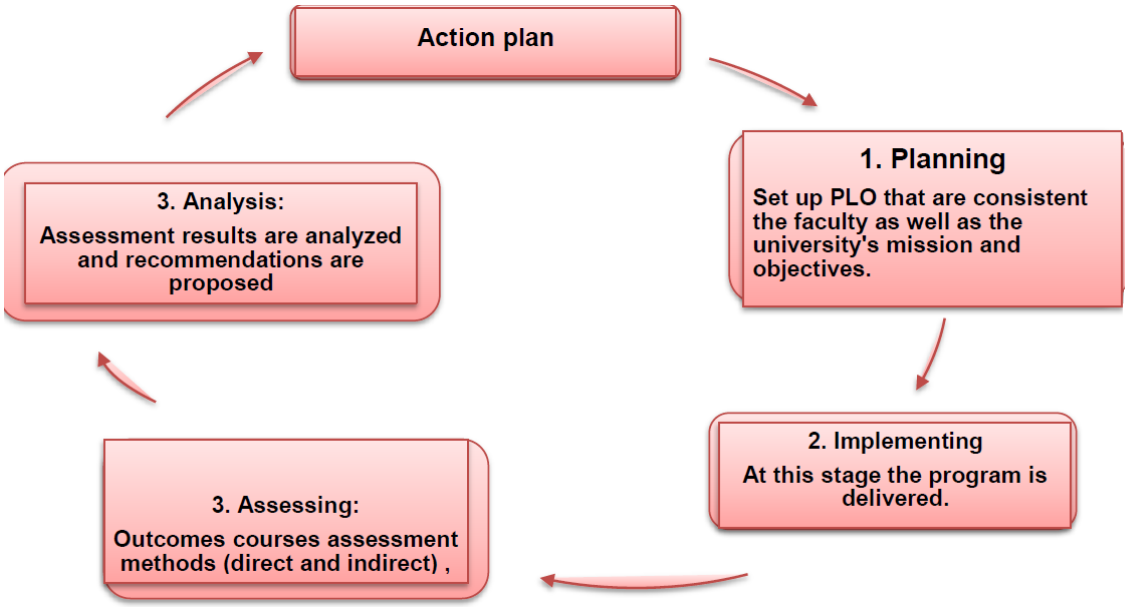
The departmental postgraduate committee will monitor the course contents taught at different campuses (male and female) along with the student's assessment process. The department is equipped with smart rooms with good video conferencing systems. The video system has been used well in the Bachelor of science program. Faculty members from the male campus have been teaching courses at the female campus via video links.

5. Arrangements to Apply the Institutional Regulations Governing the Educational and Research Partnerships (if any).

The Program follows all the university regulations and uses the standard forms provided by the university. The implementation of these regulations is carried out by the different committees in the department.

6. Assessment Plan for Program Learning Outcomes (PLOs), and Mechanisms of Using its Results in the Development Processes

Assessment Plan for Program Learning Outcomes (PLOs), and Mechanisms of Using its Results in the Development Processes (Figure2)



7. Evaluation of Program Quality Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Teaching	Students	Students fill online questionnaire to evaluate the teacher	At the end of each semester
Review	Expert Committee	Based on Student	At the end of each semester
Periodic assessment on learning outcomes	Students	Feedback	Periodically
External Evaluation	External examiner	Visits of external examiner	Periodically

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, partnerships, etc.)
Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)
Evaluation Methods (e.g., Surveys, interviews, visits, etc.)
Evaluation Time (e.g., beginning of semesters, end of academic year, etc.)

8. Program KPIs*

The period to achieve the target (...) year.

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	S1.1	Stakeholders' awareness ratings of the Mission Statement and Objectives	One year from program start	Evaluators	One year
2	S2.2	Stakeholder evaluation of the Policy Handbook, including administrative flow chart and job responsibilities	One year from program start	Evaluators	One year
3	S3.1	Students' overall evaluation on the quality of their learning experiences	One year from program start	Evaluators	One year
4	S3.2	Proportion of courses in which student evaluations were conducted during the year	One year from program start	Evaluators	One year
5	S4.1	Ratio of students to teaching staff.	On Program Start	Department office compilation	Immediately at start
6	S4.2	Students overall rating on the quality of their courses	End of the first semester	Students evaluation	One semester
7	S4.3	Proportion of teaching staff with verified doctoral qualifications.	On Program Start	Department office compilation	Immediately at start
8	S4.4	Retention Rate) Percentage of students entering programs who successfully complete first year)	End of the first year	Department office compilation	One year
9	S4.5	Graduation rates for Postgraduate students (proportion of students	End of master program	Department office compilation	Can be done once the student data is available after two

		entering postgraduate programs who complete those programs in specified time)			years from his enrollment and start date.
10	S4.6	Proportion of graduates who within six months of graduation are: (a) employed (b) enrolled in further study (c) not seeking employment or further study	Six months of graduation	Department office-compilation	Two years and half
11	S5.3	Student evaluation of academic and career counseling. (Average rating on the adequacy of academic and career counseling on a five-point scale in an annual survey of final year students)	End of the first semester	Students evaluation	One semester
12	S9.1	Proportion of teaching staff leaving the institution in the past year for reasons other than age retirement	End of the first semester	Department office compilation	At the end of each semester
13	S9.2	Proportion of teaching staff participating in professional development activities during the past year.	End of each academic year	Department office compilation	One year

* Including KPIs required by NCAAA

J. Specification Approval Authority

Council / Committee	د. عليان البلوي
	د. رندا الحربي
	د. باسم الصاعدي

	د.أسامة المغامسي
	د. مروان الهلالي
	أ.د حسين يوسف العضيم
	د. إيهاب أحمد فرح
	د. داليا النجار
	د. عاطف علي يس
	د. امين حليب
	د. مناهل سيد أحمد
	د. سارة الشيخ
	د. عفاف نافع الرشيدي
Reference No.	
Date	2023/04/04

رئيس القسم /

د. عليان مفلح البلوي