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| Sub. | Course Description – توصيف مقرر دراسي | الموضوع |  كليات المعرفة ALMAAREFA COLLEGES |
| Date | | التاريخ | |

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| Course Code & No | Stat103 | إحص 103 | رقم المقرر ورمزه |
| Course Name | Statistical Methods | الطرق الإحصائية | اسم المقرر |
| Credit Hours | 3 (3 + 0 + 1) | (1 + 0 + 3) 3 | عدد الساعات المعتمدة |
| Pre-requisite | Math101 | رياض 101 | المتطلب السابق |

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| General Description | توصيف عام |
| <p>This course is intended to introduce students to the basic concepts of study design , data collection ,data analysis and statistical inference . Topics include : Descriptive statistics ,elementary probability theory ; laws of probability , random variables , discrete and continuous probability models , functions of random variables , mathematical expression . Statistical inference ; point estimation ,interval estimation , and tests of hypotheses .Other statistical methods ; linear regression and correlation , ANOVA, nonparametric statistics ,use of statistical computing packages .</p> | <p>يهدف هذا المقرر إلى تعريف الطلاب بالمفاهيم الأساسية لتصميم الدراسة وجمع البيانات وتحليلها والاستدلال الإحصائي. وتشمل المواضيع : الإحصاء الوصفي - نظرية الاحتمالات . قوانين الاحتمالات - المتغيرات العشوائية المنفصلة والنماذج الاحتمالية المستمرة العشوائية - الاستدلال الإحصائي (تقدير نقطة، وتقدير الفترات، واختبارات الفروض) وغيرها من الأساليب الإحصائية - الانحدار والارتباط، الخطي - الإحصاءات اللا معلمية - استخدام الحزم الإحصائية</p> |

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| Course Objectives |
| <p>By the end of the course ,students should be able to :</p> <ul style="list-style-type: none"> • Understand the main features of traditional and modern statistics and develop a mature awareness of the nature and value of statistics ,including its ability to draw meaningful conclusions in the face of uncertainty ; • Analyze statistical data properly ; • Develop interest and aptitude in applying this area of mathematics to issues from many areas of human inquiry ; perform a solid understanding of the principles and theory underlying statistical interpretation ; .descriptive statistics , statistical distribution ,statistical estimation , inferential statistics ,correlation and regression , and the role of probability as a theoretical bases for much of statistics ; • Develop the ability to perform accurate calculations and evaluations using tools and techniques from probability , descriptive statistics , statistical estimation , statistical distribution , inferential statistics |

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,correlation ,and regression; .

- Develop a sound ,critical approach to interpreting statistics ,including an awareness of both the legitimate uses and possible misuses of statistical information ;
- Develop facility with technological tools (especially calculators and excel or SPSS) for displaying data and calculating statistical measures ;
- Develop an ethical perspective concerning the practice of statistics ;
- Develop improved proficiency in the art of clearly presenting a statistical argument , in both written and oral form .

Topics to be covered

- **Study design**
Types of data ,sampling ,simple random samples ,surveys and observational studies , simple Comparative experiments .
- **Graphical descriptive statistics**
Frequency distributions , bar charts – pie charts – histograms – dot plots – stem plots .
- **Numerical descriptive statistics**
Mean – median –mode – standard deviation – variance – range –quartiles – box plots .
- **Probability**
Definition of random variable ,using probability distributions of random variables as models , the normal distribution .
- **Sampling Distributions**
Sampling distribution of mean and population proportions, central limit theorem
- **Confidence intervals**
Point estimation , confidence intervals for the population mean and population proportion
- **Hypothesis Testing**
Test procedures ,errors ,and large sample test for population mean and population proportion
- Bivariate data analysis .
Scatter plots , person correlation coefficient , simple linear regression .
- **Textbooks :**
Devore and Peck , Statistics : The exploration and analysis of data , 4th edition , Duxbury publishers .