

## Academic Programs and Degrees Awarded of Statistics and Data Science Track

### Objectives

| Applied Statistics and Data Science Track Program Objectives |   |
|--|---|
| PO1  | Provide graduates with state-of-art knowledge and skills in the field of mathematics. |
| PO2  | Prepare qualified graduates for labor market.   |
| PO3  | Encourage students to participate in community service.                               |
| PO4  | Enhance students' abilities in conducting research.                                   |

### 1-Curriculum Structure

| Program Structure          | Required/ Elective | No. of courses | Credit Hours | Percentage    |
|----------------------------|--------------------|----------------|--------------|---------------|
| Institution Requirements   | Required           | 3              | 6            | %4.4          |
|                            | Elective           | 4              | 8            | %5.9          |
| College Requirements       | Required           | 8              | 28           | %20.6         |
|                            | Elective           | 2              | 4            | %2.9          |
| Program Requirements       | Required           | 24             | 72           | %52.9         |
|                            | Elective           | 3              | 9            | %6.6          |
| Capstone Course/Project    | Required           | 1              | 3            | %2.2          |
| Field Training/ Internship | Required           | 1              | 2            | %1.5          |
| Residency year             |                    |                |              | %0.0          |
| Others (Free Courses)      | Elective           | 2              | 4            | %2.9          |
| <b>Total</b>               |                    | <b>48</b>      | <b>136</b>   | <b>100.0%</b> |

## Study Plan

Academic Year-1

Level-1

Table 1. Study Plan – Level 1

| Course Code  | Course Title                     | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic           |
|--------------|----------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|---------------------------------|
|              |                                  |     |                            |             | Theory       | Lab      | Other    |                      |                                 |
| CHEM101      | General Chemistry 1              | R   | -----                      | 4           | 3            | 2        | 0        | College              | كيمياء عامة 1                   |
| BIO101       | General Biology 1                | R   | -----                      | 4           | 3            | 2        | 0        | College              | أحياء عامة 1                    |
| STAT131      | Introduction to Statistics       | R   | -----                      | 3           | 3            | 0        | 0        | College              | مقدمة في الإحصاء                |
| LNGT105      | English for scientific College 1 | R   | -----                      | 3           | 15           | 0        | 0        | College              | اللغة الإنجليزية لكلية العلوم 1 |
| IT100        | Digital Culture                  | R   | -----                      | 2           | 2            | 0        | 0        | University           | الثقافة الرقمية                 |
| xxxxxxx      | University Elective 1            | E   | -----                      | 2           | 2            | 0        | 0        | University           | اختياري جامعة 1                 |
| <b>Total</b> |                                  |     |                            | <b>18</b>   | <b>28</b>    | <b>4</b> | <b>0</b> | <b>الإجمالي</b>      |                                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-2

Table 2. Study Plan – Level 2

| Course Code  | Course Title                     | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic           |
|--------------|----------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|---------------------------------|
|              |                                  |     |                            |             | Theory       | Lab      | Other    |                      |                                 |
| PHYS101      | General Physics 1                | R   | -----                      | 4           | 3            | 2        | 0        | College              | فيزياء عامة 1                   |
| MATH101      | Calculus 1                       | R   | -----                      | 4           | 3            | 0        | 2        | College              | حساب التفاضل والتكامل 1         |
| CS103        | Programming 1                    | R   | -----                      | 3           | 2            | 1        | 0        | College              | برمجة 1                         |
| LNGT106      | English for scientific College 2 | R   | LNGT105                    | 3           | 15           | 0        | 0        | College              | اللغة الإنجليزية لكلية العلوم 2 |
| GNCR100      | University skills                | R   | -----                      | 2           | 2            | 0        | 0        | University           | المهارات الجامعية               |
| ISLSxxx      | Islamic Culture 1                | E   | -----                      | 2           | 2            | 0        | 0        | University           | ثقافة إسلامية 1                 |
| <b>Total</b> |                                  |     |                            | <b>18</b>   | <b>27</b>    | <b>3</b> | <b>2</b> | <b>الإجمالي</b>      |                                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-2

Level-3

Table 3. Study Plan – Level 3

| Course Code  | Course Title               | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic   |
|--------------|----------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-------------------------|
|              |                            |     |                            |             | Theory       | Lab      | Other    |                      |                         |
| MATH202      | Calculus 2                 | R   | MATH101                    | 4           | 3            | 0        | 2        | Program              | حساب التفاضل والتكامل 2 |
| STAT231      | Statistical programming 1  | R   | STAT131                    | 3           | 2            | 2        | 0        | Program              | برمجة إحصائية 1         |
| MATH221      | Foundations of Mathematics | R   | ---                        | 3           | 3            | 0        |          | Program              | أسس الرياضيات           |
| MATH271      | Mathematical Programming   | R   | CS103                      | 3           | 2            | 2        |          | Program              | برمجة رياضية            |
| ISLSxxx      | Islamic Culture 2          | E   | -----                      | 2           | 2            | 0        | 0        | University           | ثقافة إسلامية 2         |
| Xxxxxxx      | College Elective 1         | E   | -----                      | 2           | 2            | 0        | 0        | College              | إختياري كلية 1          |
| <b>Total</b> |                            |     |                            | <b>17</b>   | <b>14</b>    | <b>4</b> | <b>2</b> | <b>الإجمالي</b>      |                         |

Level-4

Table 2. Study Plan – Level 4

| Course Code  | Course Title           | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                        |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH204      | Calculus 3             | R   | MATH202                    | 3           | 3            | 0        | 0        | Program              | حساب تفاضل وتكامل 3   |
| MATH251      | Real Analysis 1        | R   | MATH202                    | 3           | 3            | 0        |          | Program              | تحليل حقيقي 1         |
| MATH241      | Differential equations | R   | MATH202                    | 3           | 3            | 0        |          | Program              | معادلات تفاضلية (1)   |
| MATH222      | Linear algebra         | R   | MATH221<br>MATH101         | 3           | 3            | 0        |          | Program              | الجبر الخطي           |
| xxxxxxx      | College Elective 2     | E   | -----                      | 2           | 2            | 0        | 0        | College              | إختياري كلية 2        |
| xxxxxxx      | University Elective 2  | E   | -----                      | 2           | 2            | 0        | 0        | University           | إختياري جامعة 2       |
| <b>Total</b> |                        |     |                            | <b>16</b>   | <b>16</b>    | <b>0</b> | <b>0</b> | <b>الإجمالي</b>      |                       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-3

Level-5

Table 3. Study Plan – Level 5

| Course Code  | Course Title       | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|--------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                    |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH304      | Vector Analysis    | R   | MATH204                    | 3           | 3            | 0        |          | Program              | تحليل متجهات          |
| MATH323      | Group Theory       | R   | MATH222                    | 3           | 3            | 0        |          | Program              | نظرية الزمر           |
| MATH372      | Numerical Analysis | R   | MATH241<br>MATH271         | 3           | 3            | 0        |          | Program              | تحليل عددي            |
| STAT230      | Probability 1      | R   | STAT131                    | 3           | 3            | 0        |          | Program              | احتمالات 1            |
| MATH361      | Dynamics           | R   | MATH202                    | 3           | 3            | 0        |          | Program              | ديناميكا              |
| xxxxxxx      | Free course 1      | E   | -----                      | 2           | 2            | 0        | 0        | University           | مقرر حر 1             |
| <b>Total</b> |                    |     |                            | <b>17</b>   | <b>17</b>    | <b>0</b> | <b>0</b> |                      | <b>الإجمالي</b>       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-6

Table 4. Study Plan – Level 6

| Course Code  | Course Title                          | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic       |
|--------------|---------------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------------|
|              |                                       |     |                            |             | Theory       | Lab      | Other    |                      |                             |
| STAT233      | Introduction to Statistical inference | R   | STAT230                    | 3           | 3            | 0        | 0        | Program              | مقدمة في الاستدلال الإحصائي |
| MATH342      | Differential Equation 2               | R   | MATH241                    | 3           | 3            | 0        |          | Program              | معادلات تفاضلية 2           |
| STAT375      | Data Structures and Data base systems | R   | CS103                      | 3           | 3            | 0        |          | Program              | بنية ونظم قواعد البيانات    |
| MATH381      | Topology                              | R   | MTH251                     | 3           | 3            | 0        |          | Program              | توبولوجي                    |
| MATH373      | Operation Research                    | R   | MATH222                    | 3           | 3            | 0        |          | Program              | بحوث العمليات               |
| HR100        | Entrepreneurship                      | E   | -----                      | 2           | 2            | 0        |          | Institution          | ريادة الأعمال               |
| <b>Total</b> |                                       |     |                            | <b>17</b>   | <b>17</b>    | <b>0</b> | <b>0</b> |                      | <b>الإجمالي</b>             |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-6

Table 5. Study Plan – Level (summer season)

| Course Code | Course Title   | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |     |       | Type of Requirements | Course Name in Arabic |
|-------------|----------------|-----|----------------------------|-------------|--------------|-----|-------|----------------------|-----------------------|
|             |                |     |                            |             | Theory       | Lab | Other |                      |                       |
| MATH391     | Field Training | R   | -----                      | 2           | 0            | 0   | 16    | Program              | التدريب الميداني      |
| Total       |                |     |                            | 2           | 0            | 0   | 16    |                      | الإجمالي              |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-4

Level-7

Table 6. Study Plan – Level 7

| Course Code | Course Title         | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |     |       | Type of Requirements | Course Name in Arabic |
|-------------|----------------------|-----|----------------------------|-------------|--------------|-----|-------|----------------------|-----------------------|
|             |                      |     |                            |             | Theory       | Lab | Other |                      |                       |
| STAT235     | Applied regression   | R   | STAT233                    | 3           | 3            | 0   |       | Program              | انحدار تطبيقي         |
| STAT237     | Machine Learning 1   |     | STAT231                    | 3           | 2            | 2   |       | Program              | تعلم الآلة            |
| MATH453     | Complex Analysis     | R   | MATH204<br>MATH352         | 3           | 3            | 0   | 0     | Program              | تحليل مركب            |
| MATHxxx     | Track Elective 1     | E   | -----                      | 3           | 3            | 0   | 0     | Program              | اختياري مسار 1        |
| MATH490     | Research Methodology |     | Det. Permission            | 2           | 2            | 0   | 0     | Program              | منهجية البحث          |
| xxxxxxx     | Free course 2        | E   | -----                      | 2           | 2            | 0   | 0     | University           | مقرر حر 2             |
| Total       |                      |     |                            | 16          | 16           | 0   | 0     |                      | الإجمالي              |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-8

Table 7. Study Plan – Level 8

| Course Code | Course Title               | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |     |       | Type of Requirements | Course Name in Arabic    |
|-------------|----------------------------|-----|----------------------------|-------------|--------------|-----|-------|----------------------|--------------------------|
|             |                            |     |                            |             | Theory       | Lab | Other |                      |                          |
| STAT236     | Sampling and Survey design | R   | STAT2333                   | 3           | 3            | 0   | 0     | Program              | المعاينة وتصميم المسوحات |
| STAT473     | Data Mining                | R   | STAT231                    | 3           | 3            | 0   | 0     | Program              | تنقيب البيانات           |
| MATHxxx     | Track Elective 2           | E   | -----                      | 3           | 3            | 0   |       | Program              | اختياري مسار 2           |
| MATHxxx     | Track Elective 3           | E   | -----                      | 3           | 3            | 0   |       | Program              | اختياري مسار 3           |
| MATH492     | Research project           | R   | Det. Permission            | 3           | 3            | 0   | 0     | Program              | مشروع التخرج             |
| Total       |                            |     |                            | 15          | 15           | 0   | 0     |                      | الإجمالي                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

| متطلب التخصص الاختيارية |                              |                        |               |      |      |                  |            |            |                         |    |
|-------------------------|------------------------------|------------------------|---------------|------|------|------------------|------------|------------|-------------------------|----|
| المستوى                 | Course Title                 | المتطلب السابق المقرّر | طبيعة الوحدات |      |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرّر             | م  |
|                         |                              |                        | أخرى          | عملي | نظري |                  |            |            |                         |    |
| 7/8                     | Probability 2                | STAT230                | 0             | 0    | 3    | 3                | 234        | STAT       | احتمالات 2              | 1  |
| 7/8                     | Nonparametric Methods        | STAT233                | 0             | 0    | 3    | 3                | 238        | STAT       | طرق لا معلمية           | 2  |
| 7/8                     | Categorical Data Analysis    | STAT230                | 0             | 0    | 3    | 3                | 431        | STAT       | تحليل البيانات الفئوية  | 3  |
| 7/8                     | Stochastic Processes         | STAT230                | 0             | 0    | 3    | 3                | 432        | STAT       | العمليات العشوائية      | 4  |
| 7                       | Simulation Techniques        | STAT231                | 0             | 0    | 3    | 3                | 335        | STAT       | اساليب المحاكاة         | 5  |
| 7/8                     | Data Visualization           | STAT231                | 0             | 0    | 3    | 3                | 471        | STAT       | عرض البيانات            | 6  |
| 7/8                     | Programming for data science | STAT231                | 0             | 0    | 3    | 3                | 472        | STAT       | البرمجة في علم البيانات | 7  |
| 7/8                     | Data Governance              | STAT375                | 0             | 0    | 3    | 3                | 474        | STAT       | حوكمة البيانات          | 8  |
| 8                       | Statistical Programming 2    | STAT335                | 0             | 0    | 3    | 3                | 337        | STAT       | برمجة إحصائية 2         | 9  |
| 8                       | Machine Learning 2           | STAT237                | 0             | 0    | 3    | 3                | 338        | STAT       | تعلم الآلة 2            | 10 |

| متطلب جامعة اجباري |                        |               |  |      |                  |            |            |                   |   |
|--------------------|------------------------|---------------|--|------|------------------|------------|------------|-------------------|---|
| Course Title       | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرّر       | م |
|                    |                        | عملي          |  | نظري |                  |            |            |                   |   |
| University skills  | ---                    | 0             |  | 2    | 2                | 100        | GNCR       | المهارات الجامعية | 1 |
| DigitalCulture     | ---                    | 0             |  | 2    | 2                | 100        | IT         | الثقافة الرقمية   | 2 |
| Entrepreneurship   | ---                    | 2             |  | 2    | 2                | 100        | HR         | ريادة أعمال       | 3 |

| متطلب ثقافة اسلامية اختياري (يختار الطالب 2 مقررات من 8 مقررات) |                        |               |  |      |                  |            |            |                          |   |
|---|------------------------|---------------|--|------|------------------|------------|------------|--------------------------|---|
| Course Title  | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرّر              | م |
|   |                        | عملي          |  | نظري |                  |            |            |                          |   |
| The origins of Islamic culture                                  | ---                    | 0             |  | 2    | 2                | 100        | ISLS       | أصول الثقافة الإسلامية   | 1 |
| Studies in the Prophet's biography                              | ---                    | 0             |  | 2    | 2                | 102        | ISLS       | دراسات في السيرة النبوية | 2 |
| Medical jurisprudence   | ---                    | 0             |  | 2    | 2                | 109        | ISLS       | الفقه الطبي              | 3 |
| The family in Islam   | ---                    | 0             |  | 2    | 2                | 104        | ISLS       | الأسرة في الإسلام        | 4 |
| Professional ethics   | ---                    | 0             |  | 2    | 2                | 105        | ISLS       | أخلاقيات المهنة          | 5 |

|                                    |     |   |   |   |     |      |                       |   |
|------------------------------------|-----|---|---|---|-----|------|-----------------------|---|
| Women and their role developmental | --- | 0 | 2 | 2 | 106 | ISLS | المراة ودورها التنموي | 6 |
| Economic system                    | --- | 0 | 2 | 2 | 107 | ISLS | النظام الاقتصادي      | 7 |
| Contemporary issues                | --- | 0 | 2 | 2 | 108 | ISLS | قضايا معاصرة          | 8 |

متطلب جامعة اختياري (يختار الطالب 2 مقررات من 5 مقررات)

| Course Title                  | المتطلب السابق المقرّر | طبيعة الوحدات |      | الوحدات المعتمّدة | رقم المقرر | رمز المقرر | اسم المقرر                    | م |
|-------------------------------|------------------------|---------------|------|-------------------|------------|------------|-------------------------------|---|
|                               |                        | عملي          | نظري |                   |            |            |                               |   |
| Kingdom & Its Pioneering Role | ---                    | 0             | 2    | 2                 | 103        | GNCR       | المملكة ودورها الريادي        | 1 |
| Academic Writing Skills       | ---                    | 0             | 2    | 2                 | 103        | ARAB       | مهارات الكتابة الأكاديمية     | 2 |
| Fitness and Sport Science     | ---                    | 0             | 2    | 2                 | 104        | GNCR       | اللياقة البدنية وعلوم الرياضة | 3 |
| Sustainable Development       | ---                    | 0             | 2    | 2                 | 104        | BIO        | التنمية المستدامة             | 4 |
| Lifelong learning skills      | ---                    | 0             | 2    | 2                 | 101        | CUET       | مهارات التعلم مدى الحياة      | 5 |

المقررات الحرة (يختار الطالب 2 مقررات من 4 مقررات)

| Course Title                                 | المتطلب السابق المقرّر | طبيعة الوحدات |      | الوحدات المعتمّدة | رقم المقرر | رمز المقرر | اسم المقرر                    | م |
|--|------------------------|---------------|------|-------------------|------------|------------|-------------------------------|---|
|  |                        | عملي          | نظري |                   |            |            |                               |   |
| Digital transformation                       | ---                    | 0             | 2    | 2                 | 101        | IS         | التحول الرقمي                 | 1 |
| Leadership and change management             | ---                    | 0             | 2    | 2                 | 102        | ELP        | القيادة وإدارة التغيير        | 2 |
| Volunteering and social responsibility       | ---                    | 0             | 2    | 2                 | 105        | GNCR       | التطوع والمسؤولية المجتمعية   | 3 |
| Skills to deal with people with disabilities | ---                    | 0             | 2    | 2                 | 115        | PSY        | مهارات التعامل مع ذوي الإعاقة | 4 |

| مقررات اللغة الإنجليزية بالجامعة                |                       |               |  |      |                  |            |            |  |   |
|---|-----------------------|---------------|--|------|------------------|------------|------------|--|---|
| Course Title                                    | المتطلب السابق المقرر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر                                 | م |
|   |                       | عملي          |  | نظري |                  |            |            |  |   |
| English language 1                              | ---                   | 0             |  | 20   | 4                | 101        | LNGT       | لغة إنجليزية 1                             | 1 |
| English language 2                              | LNGT101               | 0             |  | 20   | 4                | 102        | LNGT       | لغة إنجليزية 2                             | 2 |
| for Scientific and English Engineering Purposes |                       | 0             |  | 4    | 2                | 103        | LNGT       | اللغة الإنجليزية للأغراض العلمية والهندسية | 3 |
| English for Medical Purposes                    | ---                   | 0             |  | 4    | 2                | 104        | LNGT       | اللغة الإنجليزية للأغراض الصحية            | 4 |
| English for scientific 1 College                | ---                   | 0             |  | 15   | 3                | 105        | LNGT       | اللغة الإنجليزية لكلية العلوم 1            | 5 |
| English for scientific 2 College                | LNGT105               | 0             |  | 15   | 3                | 106        | LNGT       | اللغة الإنجليزية لكلية العلوم 2            | 6 |
| English for non-scientific Colleges             | ---                   | 0             |  | 3    | 3                | 100        | LNGT       | اللغة الإنجليزية للكليات النظرية           | 7 |
| Business English                                | ---                   | 0             |  | 3    | 3                | 108        | LNGT       | اللغة الانجليزية للأعمال                   | 8 |

## 2-Degree(s) Awarded.

The program awards a Bachelor of Science in Mathematics (مسار) في الرياضيات - (BSc. in Statistics and Data Science). The graduation requirements that student has to complete 136 credits approved by the mathematics program.



## Academic Program and Degrees Awarded of Mathematics Track

### 1-Curriculum Structure

| Program Structure          | Required/ Elective | No. of courses | Credit Hours | Percentage    |
|----------------------------|--------------------|----------------|--------------|---------------|
| Institution Requirements   | Required           | 3              | 6            | %4.4          |
|                            | Elective           | 4              | 8            | %5.9          |
| College Requirements       | Required           | 8              | 28           | %20.6         |
|                            | Elective           | 2              | 4            | %2.9          |
| Program Requirements       | Required           | 24             | 72           | %52.9         |
|                            | Elective           | 3              | 9            | %6.6          |
| Capstone Course/Project    | Required           | 1              | 3            | %2.2          |
| Field Training/ Internship | Required           | 1              | 2            | %1.5          |
| Residency year             |                    |                |              | %0.0          |
| Others (Free Courses)      | Elective           | 2              | 4            | %2.9          |
| <b>Total</b>               |                    | <b>48</b>      | <b>136</b>   | <b>100.0%</b> |

## Study Plan

Academic Year-1

Level-1

Table 1. Study Plan – Level 1

| Course Code  | Course Title                     | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic           |
|--------------|----------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|---------------------------------|
|              |                                  |     |                            |             | Theory       | Lab      | Other    |                      |                                 |
| CHEM101      | General Chemistry 1              | R   | -----                      | 4           | 3            | 2        | 0        | College              | كيمياء عامة 1                   |
| BIO101       | General Biology 1                | R   | -----                      | 4           | 3            | 2        | 0        | College              | أحياء عامة 1                    |
| STAT131      | Introduction to Statistics       | R   | -----                      | 3           | 3            | 0        | 0        | College              | مقدمة في الإحصاء                |
| LNGT105      | English for scientific College 1 | R   | -----                      | 3           | 15           | 0        | 0        | College              | اللغة الإنجليزية لكلية العلوم 1 |
| IT100        | Digital Culture                  | R   | -----                      | 2           | 2            | 0        | 0        | University           | الثقافة الرقمية                 |
| xxxxxxx      | University Elective 1            | E   | -----                      | 2           | 2            | 0        | 0        | University           | اختياري جامعة 1                 |
| <b>Total</b> |                                  |     |                            | <b>18</b>   | <b>28</b>    | <b>4</b> | <b>0</b> | <b>الإجمالي</b>      |                                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-2

Table 2. Study Plan – Level 2

| Course Code  | Course Title                     | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic           |
|--------------|----------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|---------------------------------|
|              |                                  |     |                            |             | Theory       | Lab      | Other    |                      |                                 |
| PHYS101      | General Physics 1                | R   | -----                      | 4           | 3            | 2        | 0        | College              | فيزياء عامة 1                   |
| MATH101      | Calculus 1                       | R   | -----                      | 4           | 3            | 0        | 2        | College              | حساب التفاضل والتكامل 1         |
| CS103        | Programming 1                    | R   | -----                      | 3           | 2            | 1        | 0        | College              | برمجة 1                         |
| LNGT106      | English for scientific College 2 | R   | LNGT105                    | 3           | 15           | 0        | 0        | College              | اللغة الإنجليزية لكلية العلوم 2 |
| GNCR100      | University skills                | R   | -----                      | 2           | 2            | 0        | 0        | University           | المهارات الجامعية               |
| ISLSxxx      | Islamic Culture 1                | E   | -----                      | 2           | 2            | 0        | 0        | University           | ثقافة إسلامية 1                 |
| <b>Total</b> |                                  |     |                            | <b>18</b>   | <b>27</b>    | <b>3</b> | <b>2</b> | <b>الإجمالي</b>      |                                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-2

Level-3

Table 3. Study Plan – Level 3

| Course Code  | Course Title               | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic   |
|--------------|----------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-------------------------|
|              |                            |     |                            |             | Theory       | Lab      | Other    |                      |                         |
| MATH202      | Calculus 2                 | R   | MATH101                    | 4           | 3            | 0        | 2        | Program              | حساب التفاضل والتكامل 2 |
| STAT231      | Statistical programming 1  | R   | STAT131                    | 3           | 2            | 2        | 0        | Program              | برمجة إحصائية 1         |
| MATH221      | Foundations of Mathematics | R   | ---                        | 3           | 3            | 0        |          | Program              | أسس الرياضيات           |
| MATH271      | Mathematical Programming   | R   | CS103                      | 3           | 2            | 2        |          | Program              | برمجة رياضية            |
| ISLSxxx      | Islamic Culture 2          | E   | -----                      | 2           | 2            | 0        | 0        | University           | ثقافة إسلامية 2         |
| xxxxxxx      | College Elective 1         | E   | -----                      | 2           | 2            | 0        | 0        | College              | إختياري كلية 1          |
| <b>Total</b> |                            |     |                            | <b>17</b>   | <b>14</b>    | <b>4</b> | <b>2</b> | <b>الإجمالي</b>      |                         |

Level-4

Table 1. Study Plan – Level 4

| Course Code  | Course Title           | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                        |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH204      | Calculus 3             | R   | MATH202                    | 3           | 3            | 0        | 0        | Program              | حساب تفاضل وتكامل 3   |
| MATH251      | Real Analysis 1        | R   | MATH202                    | 3           | 3            | 0        |          | Program              | تحليل حقيقي 1         |
| MATH241      | Differential equations | R   | MATH202                    | 3           | 3            | 0        |          | Program              | معادلات تفاضلية (1)   |
| MATH222      | Linear algebra         | R   | MATH221<br>MATH101         | 3           | 3            | 0        |          | Program              | الجبر الخطي           |
| xxxxxxx      | College Elective 2     | E   | -----                      | 2           | 2            | 0        | 0        | College              | إختياري كلية 2        |
| xxxxxxx      | University Elective 2  | E   | -----                      | 2           | 2            | 0        | 0        | University           | إختياري جامعة 2       |
| <b>Total</b> |                        |     |                            | <b>16</b>   | <b>16</b>    | <b>0</b> | <b>0</b> | <b>الإجمالي</b>      |                       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-3

Level-5

Table 2. Study Plan – Level 5

| Course Code  | Course Title       | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|--------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                    |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH304      | Vector Analysis    | R   | MATH204                    | 3           | 3            | 0        |          | Program              | تحليل متجهات          |
| MATH323      | Group Theory       | R   | MATH222                    | 3           | 3            | 0        |          | Program              | نظرية الزمر           |
| MATH372      | Numerical Analysis | R   | MATH241<br>MATH271         | 3           | 3            | 0        |          | Program              | تحليل عددي            |
| STAT230      | Probability 1      | R   | STAT131                    | 3           | 3            | 0        |          | Program              | احتمالات 1            |
| MATH361      | Dynamics           | R   | MATH202                    | 3           | 3            | 0        |          | Program              | ديناميكا              |
| xxxxxxx      | Free course 1      | E   | -----                      | 2           | 2            | 0        | 0        | University           | مقرر حر 1             |
| <b>Total</b> |                    |     |                            | <b>17</b>   | <b>17</b>    | <b>0</b> | <b>0</b> |                      | <b>الإجمالي</b>       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-6

Table 3. Study Plan – Level 6

| Course Code  | Course Title                  | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic  |
|--------------|-------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|------------------------|
|              |                               |     |                            |             | Theory       | Lab      | Other    |                      |                        |
| MATH321      | Introduction to Number Theory | R   | MATH222                    | 3           | 3            | 0        | 0        | Program              | مقدمة في نظرية الأعداد |
| MATH342      | Differential Equation 2       | R   | MATH241                    | 3           | 3            | 0        |          | Program              | معادلات تفاضلية 2      |
| MATH352      | Real Analysis2                | R   | MATH251                    | 3           | 3            | 0        |          | Program              | تحليل حقيقي 2          |
| MATH381      | Topology                      | R   | MTH251                     | 3           | 3            | 0        |          | Program              | توبولوجي               |
| MATH373      | Operation Research            | R   | MATH222                    | 3           | 3            | 0        |          | Program              | بحوث العمليات          |
| HR100        | Entrepreneurship              | E   | -----                      | 2           | 2            | 0        |          | Institution          | ريادة الأعمال          |
| <b>Total</b> |                               |     |                            | <b>17</b>   | <b>17</b>    | <b>0</b> | <b>0</b> |                      | <b>الإجمالي</b>        |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level (Summer)

Table 7. Study Plan – Level (Summer)

| Course Code  | Course Title   | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |           | Type of Requirements | Course Name in Arabic |
|--------------|----------------|-----|----------------------------|-------------|--------------|----------|-----------|----------------------|-----------------------|
|              |                |     |                            |             | Theory       | Lab      | Other     |                      |                       |
| MATH391      | Field Training | R   | -----                      | 0           | 0            | 2        | 16        | Program              | التدريب الميداني      |
| <b>Total</b> |                |     |                            | <b>2</b>    | <b>0</b>     | <b>0</b> | <b>16</b> | <b>الإجمالي</b>      |                       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-4

Level-7

Table 8. Study Plan – Level 7

| Course Code  | Course Title                   | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|--------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                                |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH443      | Partial Differential Equations | R   | MATH342                    | 3           | 3            | 0        | 0        | Program              | معادلات تفاضلية جزئية |
| MATH424      | Ring Theory                    | R   | MATH323                    | 3           | 3            | 0        | 0        | Program              | نظرية الحلقات         |
| MATH453      | Complex Analysis               | R   | MATH204<br>MATH352         | 3           | 3            | 0        | 0        | Program              | تحليل مركب            |
| MATH490      | Research Methodology           | R   | Det.<br>Permission         | 2           | 2            | 0        | 0        | Program              | منهجية البحث          |
| MATHxxx      | Track Elective 1               | E   | -----                      | 3           | 3            | 0        | 0        | Program              | اختياري مسار 1        |
| xxxxxxx      | Free course 2                  | E   | -----                      | 2           | 2            | 0        | 0        | University           | مقرر حر 2             |
| <b>Total</b> |                                |     |                            | <b>16</b>   | <b>16</b>    | <b>0</b> | <b>0</b> | <b>الإجمالي</b>      |                       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-8

Table 9. Study Plan – Level 8

| Course Code  | Course Title                   | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|--------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                                |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH454      | Functional Analysis            | R   | MATH352<br>MATH381         | 3           | 3            | 0        |          | Program              | تحليل دالي            |
| MATH455      | Introduction to Measure Theory | R   | MATH352                    | 3           | 3            | 0        |          | Program              | مقدمة في نظرية القياس |
| MATHxxx      | Track Elective 2               | E   | -----                      | 3           | 3            | 0        |          | Program              | اختياري مسار 2        |
| MATHxxx      | Track Elective 3               | E   | -----                      | 3           | 3            | 0        |          | Program              | اختياري مسار 3        |
| MATH492      | Research project               | R   | Det.<br>Permission         | 3           | 3            | 0        | 0        | Program              | مشروع التخرج          |
| <b>Total</b> |                                |     |                            | <b>15</b>   | <b>15</b>    | <b>0</b> | <b>0</b> | <b>الإجمالي</b>      |                       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

| متطلب التخصص الاختيارية |                               |                           |               |       |       |                     |                |             |                          |    |
|-------------------------|-------------------------------|---------------------------|---------------|-------|-------|---------------------|----------------|-------------|--------------------------|----|
| المستوى                 | Course Title                  | المتطلب السابق<br>المقرّر | طبيعة الوحدات |       |       | الوحدات<br>المعتمدة | رقم<br>المقرّر | رمز المقرّر | اسم المقرّر              | م  |
|                         |                               |                           | أخرى          | عمليّ | نظريّ |                     |                |             |                          |    |
| 7/8                     | Set Theory                    | MATH221                   | 0             | 0     | 3     | 3                   | 421            | MATH        | نظرية المجموعات          | 1  |
| 7/8                     | Advanced Linear Algebra       | MATH222                   | 0             | 0     | 3     | 3                   | 422            | MATH        | الجبر الخطي المتقدم      | 2  |
| 7/8                     | Introduction to Graph Theory  | MATH222                   | 0             | 0     | 3     | 3                   | 426            | MATH        | مقدمة في نظرية الرسوم    | 3  |
| 7/8                     | Analytic Number Theory        | MATH321                   | 0             | 0     | 3     | 3                   | 427            | MATH        | نظرية الاعداد التحليلية  | 4  |
| 7/8                     | Introduction to Module Theory | MATH424                   | 0             | 0     | 3     | 3                   | 428            | MATH        | نظرية الموديولات         | 5  |
| 7/8                     | Topics in Algebra             | MATH424                   | 0             | 0     | 3     | 3                   | 429            | MATH        | مواضيع في الجبر          | 6  |
| 7/8                     | Special Functions             | MATH342                   | 0             | 0     | 3     | 3                   | 445            | MATH        | الدوال الخاصة            | 7  |
| 7/8                     | Topics in Numerical Analysis  | MATH372                   | 0             | 0     | 3     | 3                   | 575            | MATH        | مواضيع في التحليل العددي | 8  |
| 7/8                     | Differential Geometry         | MATH 304                  | 0             | 0     | 3     | 3                   | 482            | MATH        | هندسة تفاضلية            | 9  |
| 7/8                     | Advanced Topology             | MATH381                   | 0             | 0     | 3     | 3                   | 483            | MATH        | التوبولوجيا المتقدم      | 10 |

| متطلب كلية اختياري (يختار الطالب 2 مقررات من 5 مقررات) |                           |               |       |   |                     |                |                              |             |   |
|--|---------------------------|---------------|-------|---|---------------------|----------------|------------------------------|-------------|---|
| Title Course   | المتطلب السابق<br>المقرّر | طبيعة الوحدات |       |   | الوحدات<br>المعتمدة | رقم<br>المقرّر | رمز<br>المقرّر               | اسم المقرّر | م |
|  |                           | عمليّ         | نظريّ |   |                     |                |                              |             |   |
| Renewable Energy                                       | ---                       | 0             | 2     | 2 | 200                 | PHYS           | الطاقة المتجددة              | 1           |   |
| Security and Safety Management                         | ---                       | 0             | 2     | 2 | 200                 | CHEM           | إدارة الأمن والسلامة         | 2           |   |
| Ecology and Sustainable Development                    | ---                       | 0             | 2     | 2 | 200                 | BIO            | البيئة والتنمية المستدامة    | 3           |   |
| Basics of Mathematical Programming                     | ---                       | 0             | 2     | 2 | 200                 | MATH           | أساسيات البرمجة الرياضية     | 4           |   |
| Modern Technologies Computer in Science                | ---                       | 0             | 2     | 2 | 200                 | CS             | تقنيات حديثة في علوم الحاسوب | 5           |   |

| متطلب جامعة اجباري |                        |               |  |      |                  |            |            |                   |   |
|--------------------|------------------------|---------------|--|------|------------------|------------|------------|-------------------|---|
| Course Title       | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر        | م |
|                    |                        | عملي          |  | نظري |                  |            |            |                   |   |
| University skills  | ---                    | 0             |  | 2    | 2                | 100        | GNCR       | المهارات الجامعية | 1 |
| DigitalCulture     | ---                    | 0             |  | 2    | 2                | 100        | IT         | الثقافة الرقمية   | 2 |
| Entrepreneurship   | ---                    | 2             |  | 2    | 2                | 100        | HR         | ريادة أعمال       | 3 |

| متطلب ثقافة اسلامية اختياري (يختار الطالب 2 مقررات من 8 مقررات) |                        |               |  |      |                  |            |            |                          |   |
|---|------------------------|---------------|--|------|------------------|------------|------------|--------------------------|---|
| Course Title  | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر               | م |
|   |                        | عملي          |  | نظري |                  |            |            |                          |   |
| The origins of Islamic culture                                  | ---                    | 0             |  | 2    | 2                | 100        | ISLS       | أصول الثقافة الإسلامية   | 1 |
| Studies in the Prophet's biography                              | ---                    | 0             |  | 2    | 2                | 102        | ISLS       | دراسات في السيرة النبوية | 2 |
| Medical jurisprudence   | ---                    | 0             |  | 2    | 2                | 109        | ISLS       | الفقه الطبي              | 3 |
| The family in Islam   | ---                    | 0             |  | 2    | 2                | 104        | ISLS       | الأسرة في الإسلام        | 4 |
| Professional ethics   | ---                    | 0             |  | 2    | 2                | 105        | ISLS       | أخلاقيات المهنة          | 5 |
| Women and their role developmental                              | ---                    | 0             |  | 2    | 2                | 106        | ISLS       | المرأة ودورها التنموي    | 6 |
| Economic system   | ---                    | 0             |  | 2    | 2                | 107        | ISLS       | النظام الاقتصادي         | 7 |
| Contemporary issues   | ---                    | 0             |  | 2    | 2                | 108        | ISLS       | قضايا معاصرة             | 8 |

| متطلب جامعة اختياري (يختار الطالب 2 مقررات من 5 مقررات) |                        |               |  |      |                  |            |            |                               |   |
|---|------------------------|---------------|--|------|------------------|------------|------------|-------------------------------|---|
| Course Title  | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر                    | م |
|   |                        | عملي          |  | نظري |                  |            |            |                               |   |
| Kingdom & Its Pioneering Role                           | ---                    | 0             |  | 2    | 2                | 103        | GNCR       | المملكة ودورها الريادي        | 1 |
| Academic Writing Skills                                 | ---                    | 0             |  | 2    | 2                | 103        | ARAB       | مهارات الكتابة الأكاديمية     | 2 |
| Fitness and Sport Science                               | ---                    | 0             |  | 2    | 2                | 104        | GNCR       | اللياقة البدنية وعلوم الرياضة | 3 |
| Sustainable Development                                 | ---                    | 0             |  | 2    | 2                | 104        | BIO        | التنمية المستدامة             | 4 |
| Lifelong learning skills                                | ---                    | 0             |  | 2    | 2                | 101        | CUET       | مهارات التعلم مدى الحياة      | 5 |

| المقررات الحرة (يختار الطالب 2 مقررات من 4 مقررات) |                        |               |  |      |                  |           |           |                               |   |
|--|------------------------|---------------|--|------|------------------|-----------|-----------|-------------------------------|---|
| Course Title                                       | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقر | رمز المقر | اسم المقرّر                   | م |
|  |                        | عملي          |  | نظري |                  |           |           |                               |   |
| Digital transformation                             | ---                    | 0             |  | 2    | 2                | 101       | IS        | التحول الرقمي                 | 1 |
| Leadership and change management                   | ---                    | 0             |  | 2    | 2                | 102       | ELP       | القيادة وإدارة التغيير        | 2 |
| Volunteering and social responsibility             | ---                    | 0             |  | 2    | 2                | 105       | GNCR      | التطوع والمسؤولية المجتمعية   | 3 |
| Skills to deal with people with disabilities       | ---                    | 0             |  | 2    | 2                | 115       | PSY       | مهارات التعامل مع ذوي الإعاقة | 4 |

| مقررات اللغة الإنجليزية بالجامعة                |                        |               |  |      |                  |           |           |  |   |
|---|------------------------|---------------|--|------|------------------|-----------|-----------|--|---|
| Course Title                                    | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقر | رمز المقر | اسم المقرّر                                | م |
|   |                        | عملي          |  | نظري |                  |           |           |  |   |
| English language 1                              | ---                    | 0             |  | 20   | 4                | 101       | LNGT      | لغة إنجليزية 1                             | 1 |
| English language 2                              | LNGT101                | 0             |  | 20   | 4                | 102       | LNGT      | لغة إنجليزية 2                             | 2 |
| for Scientific and English Engineering Purposes |                        | 0             |  | 4    | 2                | 103       | LNGT      | اللغة الإنجليزية للأغراض العلمية والهندسية | 3 |
| English for Medical Purposes                    | ---                    | 0             |  | 4    | 2                | 104       | LNGT      | اللغة الإنجليزية للأغراض الصحية            | 4 |
| English for scientific 1 College                | ---                    | 0             |  | 15   | 3                | 105       | LNGT      | اللغة الإنجليزية لكلية العلوم 1            | 5 |
| English for scientific 2 College                | LNGT105                | 0             |  | 15   | 3                | 106       | LNGT      | اللغة الإنجليزية لكلية العلوم 2            | 6 |
| English for non-scientific Colleges             | ---                    | 0             |  | 3    | 3                | 100       | LNGT      | اللغة الإنجليزية للكليات النظرية           | 7 |
| Business English                                | ---                    | 0             |  | 3    | 3                | 108       | LNGT      | اللغة الانجليزية للأعمال                   | 8 |

## 2-Degree(s) Awarded.

The program awards a Bachelor of Science in Mathematics (بكالوريوس العلوم في الرياضيات) (BSc. in Mathematics). The graduation requirements that student has to complete 136 credits approved by the Mathematics program.





## Academic Programs and Degrees Awarded of Applied Mathematics Track

### 1-Curriculum Structure

| Program Structure          | Required/ Elective | No. of courses | Credit Hours | Percentage    |
|----------------------------|--------------------|----------------|--------------|---------------|
| Institution Requirements   | Required           | 3              | 6            | %4.4          |
|                            | Elective           | 4              | 8            | %5.9          |
| College Requirements       | Required           | 8              | 28           | %20.6         |
|                            | Elective           | 2              | 4            | %2.9          |
| Program Requirements       | Required           | 24             | 72           | %52.9         |
|                            | Elective           | 3              | 9            | %6.6          |
| Capstone Course/Project    | Required           | 1              | 3            | %2.2          |
| Field Training/ Internship | Required           | 1              | 2            | %1.5          |
| Residency year             |                    |                |              | %0.0          |
| Others (Free Courses)      | Elective           | 2              | 4            | %2.9          |
| <b>Total</b>               |                    | <b>48</b>      | <b>136</b>   | <b>100.0%</b> |

NORTHERN BORDER UNIVERSITY

## Study Plan

Academic Year-1

Level-1

Table 1. Study Plan – Level 1

| Course Code  | Course Title                     | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic           |
|--------------|----------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|---------------------------------|
|              |                                  |     |                            |             | Theory       | Lab      | Other    |                      |                                 |
| CHEM101      | General Chemistry 1              | R   | -----                      | 4           | 3            | 2        | 0        | College              | كيمياء عامة 1                   |
| BIO101       | General Biology 1                | R   | -----                      | 4           | 3            | 2        | 0        | College              | أحياء عامة 1                    |
| STAT131      | Introduction to Statistics       | R   | -----                      | 3           | 3            | 0        | 0        | College              | مقدمة في الإحصاء                |
| LNGT105      | English for scientific College 1 | R   | -----                      | 3           | 15           | 0        | 0        | College              | اللغة الإنجليزية لكلية العلوم 1 |
| IT100        | Digital Culture                  | R   | -----                      | 2           | 2            | 0        | 0        | University           | الثقافة الرقمية                 |
| xxxxxxx      | University Elective 1            | E   | -----                      | 2           | 2            | 0        | 0        | University           | اختياري جامعة 1                 |
| <b>Total</b> |                                  |     |                            | <b>18</b>   | <b>28</b>    | <b>4</b> | <b>0</b> | <b>الإجمالي</b>      |                                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-2

Table 2. Study Plan – Level 2

| Course Code  | Course Title                     | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic           |
|--------------|----------------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|---------------------------------|
|              |                                  |     |                            |             | Theory       | Lab      | Other    |                      |                                 |
| PHYS101      | General Physics 1                | R   | -----                      | 4           | 3            | 2        | 0        | College              | فيزياء عامة 1                   |
| MATH101      | Calculus 1                       | R   | -----                      | 4           | 3            | 0        | 2        | College              | حساب التفاضل والتكامل 1         |
| CS103        | Programming 1                    | R   | -----                      | 3           | 2            | 1        | 0        | College              | برمجة 1                         |
| LNGT106      | English for scientific College 2 | R   | LNGT105                    | 3           | 15           | 0        | 0        | College              | اللغة الإنجليزية لكلية العلوم 2 |
| GNCR100      | University skills                | R   | -----                      | 2           | 2            | 0        | 0        | University           | المهارات الجامعية               |
| ISLSxxx      | Islamic Culture 1                | E   | -----                      | 2           | 2            | 0        | 0        | University           | ثقافة إسلامية 1                 |
| <b>Total</b> |                                  |     |                            | <b>18</b>   | <b>27</b>    | <b>3</b> | <b>2</b> | <b>الإجمالي</b>      |                                 |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-2

Level-3

Table 3. Study Plan – Level 3

| Course Code  | Course Title               | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic   |
|--------------|----------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-------------------------|
|              |                            |     |                            |             | Theory       | Lab      | Other    |                      |                         |
| MATH202      | Calculus 2                 | R   | MATH101                    | 4           | 3            | 0        | 2        | Program              | حساب التفاضل والتكامل 2 |
| STAT231      | Statistical programming 1  | R   | STAT131                    | 3           | 2            | 2        | 0        | Program              | برمجة إحصائية 1         |
| MATH221      | Foundations of Mathematics | R   | ---                        | 3           | 3            | 0        |          | Program              | أسس الرياضيات           |
| MATH271      | Mathematical Programming   | R   | CS103                      | 3           | 2            | 2        |          | Program              | برمجة رياضية            |
| ISLSxxx      | Islamic Culture 2          | E   | -----                      | 2           | 2            | 0        | 0        | University           | ثقافة إسلامية 2         |
| xxxxxxx      | College Elective 1         | E   | -----                      | 2           | 2            | 0        | 0        | College              | إختياري كلية 1          |
| <b>Total</b> |                            |     |                            | <b>17</b>   | <b>14</b>    | <b>4</b> | <b>2</b> | <b>الإجمالي</b>      |                         |

Level-4

Table 2. Study Plan – Level 4

| Course Code  | Course Title           | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                        |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH204      | Calculus 3             | R   | MATH202                    | 3           | 3            | 0        | 0        | Program              | حساب تفاضل وتكامل 3   |
| MATH251      | Real Analysis 1        | R   | MATH202                    | 3           | 3            | 0        |          | Program              | تحليل حقيقي 1         |
| MATH241      | Differential equations | R   | MATH202                    | 3           | 3            | 0        |          | Program              | معادلات تفاضلية (1)   |
| MATH222      | Linear algebra         | R   | MATH221<br>MATH101         | 3           | 3            | 0        |          | Program              | الجبر الخطي           |
| xxxxxxx      | College Elective 2     | E   | -----                      | 2           | 2            | 0        | 0        | College              | إختياري كلية 2        |
| xxxxxxx      | University Elective 2  | E   | -----                      | 2           | 2            | 0        | 0        | University           | إختياري جامعة 2       |
| <b>Total</b> |                        |     |                            | <b>16</b>   | <b>16</b>    | <b>0</b> | <b>0</b> | <b>الإجمالي</b>      |                       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Academic Year-3

Level-5

Table 3. Study Plan – Level 5

| Course Code  | Course Title       | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|--------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                    |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH304      | Vector Analysis    | R   | MATH204                    | 3           | 3            | 0        |          | Program              | تحليل متجهات          |
| MATH323      | Group Theory       | R   | MATH222                    | 3           | 3            | 0        |          | Program              | نظرية الزمر           |
| MATH372      | Numerical Analysis | R   | MATH241<br>MATH271         | 3           | 3            | 0        |          | Program              | تحليل عددي            |
| STAT230      | Probability 1      | R   | STAT131                    | 3           | 3            | 0        |          | Program              | احتمالات 1            |
| MATH361      | Dynamics           | R   | MATH202                    | 3           | 3            | 0        |          | Program              | ديناميكا              |
| xxxxxxx      | Free course 1      | E   | -----                      | 2           | 2            | 0        | 0        | University           | مقرر حر 1             |
| <b>Total</b> |                    |     |                            | <b>17</b>   | <b>17</b>    | <b>0</b> | <b>0</b> |                      | <b>الإجمالي</b>       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-6

Table 4. Study Plan – Level 6

| Course Code  | Course Title            | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |          |          | Type of Requirements | Course Name in Arabic |
|--------------|-------------------------|-----|----------------------------|-------------|--------------|----------|----------|----------------------|-----------------------|
|              |                         |     |                            |             | Theory       | Lab      | Other    |                      |                       |
| MATH345      | Continuum Mechanics     | R   | MATH241                    | 3           | 3            | 0        | 0        | Program              | ميكانيكا التلاحم      |
| MATH342      | Differential Equation 2 | R   | MATH241                    | 3           | 3            | 0        |          | Program              | معادلات تفاضلية 2     |
| MATH377      | Dynamical system        | R   | MATH222<br>MATH241         | 3           | 3            | 0        |          | Program              | الأنظمة الديناميكية   |
| MATH381      | Topology                | R   | MTH251                     | 3           | 3            | 0        |          | Program              | توبولوجي              |
| MATH373      | Operation Research      | R   | MATH222                    | 3           | 3            | 0        |          | Program              | بحوث العمليات         |
| HR100        | Entrepreneurship        | E   | -----                      | 2           | 2            | 0        |          | Institution          | ريادة الأعمال         |
| <b>Total</b> |                         |     |                            | <b>17</b>   | <b>17</b>    | <b>0</b> | <b>0</b> |                      | <b>الإجمالي</b>       |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-6

Table 5. Study Plan – Level (summer season)

| Course Code | Course Title   | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |     |       | Type of Requirements | Course Name in Arabic |
|-------------|----------------|-----|----------------------------|-------------|--------------|-----|-------|----------------------|-----------------------|
|             |                |     |                            |             | Theory       | Lab | Other |                      |                       |
| MATH391     | Field Training | R   | -----                      | 2           | 0            | 0   | 16    | Program              | التدريب الميداني      |
| Total       |                |     |                            | 2           | 0            | 0   | 16    |                      | الإجمالي              |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clini

Academic Year-4

Level-7

Table 6. Study Plan – Level 7

| Course Code | Course Title                   | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |     |       | Type of Requirements | Course Name in Arabic |
|-------------|--------------------------------|-----|----------------------------|-------------|--------------|-----|-------|----------------------|-----------------------|
|             |                                |     |                            |             | Theory       | Lab | Other |                      |                       |
| MATH443     | Partial Differential Equations | R   | MATH342                    | 3           | 3            | 0   | 0     | Program              | معادلات تفاضلية جزئية |
| MATH453     | Complex Analysis               | R   | MATH204<br>MATH352         | 3           | 3            | 0   | 0     | Program              | تحليل مركب            |
| MATHxxx     | Track Elective 1               | E   | -----                      | 3           | 3            | 0   | 0     | Program              | اختياري مسار 1        |
| MATHxxx     | Track Elective 2               | E   | -----                      | 3           | 3            | 0   | 0     | Program              | اختياري مسار 2        |
| MATH490     | Research Methodology           |     | Det. Permission            | 2           | 2            | 0   | 0     | Program              | منهجية البحث          |
| Xxxxxxx     | Free course 2                  | E   | -----                      | 2           | 2            | 0   | 0     | University           | مقرر حر 2             |
| Total       |                                |     |                            | 16          | 16           | 0   | 0     |                      | الإجمالي              |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

Level-8

Table 7. Study Plan – Level 8

| Course Code | Course Title            | R/E | Pre-Requisite Courses Code | Credit Unit | Contact Unit |     |       | Type of Requirements | Course Name in Arabic |
|-------------|-------------------------|-----|----------------------------|-------------|--------------|-----|-------|----------------------|-----------------------|
|             |                         |     |                            |             | Theory       | Lab | Other |                      |                       |
| MATH465     | Mathematical Modelling  | R   | MATH241                    | 3           | 3            | 0   | 0     | Program              | النمذجة الرياضية      |
| MATH360     | Financial Mathematics 1 | R   | MATH202<br>STAT230         | 3           | 3            | 0   | 0     | Program              | الرياضيات المالية 1   |
| MATH463     | Theory of Elasticity    | R   | MATH443<br>MATH345         | 3           | 3            | 0   | 0     | Program              | نظرية المرونة         |
| MATHxxx     | Track Elective 3        | E   | -----                      | 3           | 3            | 0   | 0     | Program              | اختياري مسار 3        |
| MATH492     | Research project        | R   | Det. Permission            | 3           | 3            | 0   | 0     | Program              | مشروع التخرج          |
| Total       |                         |     |                            | 15          | 15           | 0   | 0     |                      | الإجمالي              |

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

متطلب التخصص الاختيارية

| المستوى | Course Title                                 | المتطلب السابق المقرّر | طبيعة الوحدات |      |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر                            | م  |
|---------|--|------------------------|---------------|------|------|------------------|------------|------------|---------------------------------------|----|
|         |  |                        | أخرى          | عملي | نظري |                  |            |            |                                       |    |
| 7/8     | Geo-mathematics                              | MATH241                | 0             | 0    | 3    | 3                | 406        | MATH       | الرياضيات الجغرافية                   | 1  |
| 7/8     | Introduction to Graph Theory                 | MATH222                | 0             | 0    | 3    | 3                | 426        | MATH       | مقدمة في نظرية الرسوم                 | 2  |
| 7/8     | Financial Mathematics 2                      | MATH360                | 0             | 0    | 3    | 3                | 467        | MATH       | الرياضيات المالية 2                   | 3  |
| 7/8     | Mathematical Biology                         | MATH377                | 0             | 0    | 3    | 3                | 470        | MATH       | الرياضيات الحيوية                     | 4  |
| 7/8     | Discrete Mathematics                         | MATH221                | 0             | 0    | 3    | 3                | 474        | MATH       | الرياضيات المتقطعة                    | 5  |
| 7/8     | Topics In Numerical Analysis                 | MATH372                | 0             | 0    | 3    | 3                | 475        | MATH       | مواضيع في التحليل العددي              | 6  |
| 7/8     | Mathematical Optimization                    | MATH372                | 0             | 0    | 3    | 3                | 477        | MATH       | الامتلية الرياضية                     | 7  |
| 7/8     | Finite Difference and Finite Element Methods | MATH372                | 0             | 0    | 3    | 3                | 479        | MATH       | طرق الفروق المنتهية والعناصر المنتهية | 8  |
| 8       | Perturbation Theory                          | MATH443                | 0             | 0    | 3    | 3                | 446        | MATH       | نظرية الاضطراب                        | 9  |
| 8       | Fluid Mechanics                              | MATH443, MATH 453      |               |      |      |                  | 462        |            | ميكانيكا الموائع                      | 10 |

متطلب جامعة اجباري

| Course Title      | المتطلب السابق المقرّر | طبيعة الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر        | م |
|-------------------|------------------------|---------------|--|------|------------------|------------|------------|-------------------|---|
|                   |                        | عملي          |  | نظري |                  |            |            |                   |   |
| University skills | ---                    | 0             |  | 2    | 2                | 100        | GNCR       | المهارات الجامعية | 1 |
| Digital Culture   | ---                    | 0             |  | 2    | 2                | 100        | IT         | الثقافة الرقمية   | 2 |
| Entrepreneurship  | ---                    | 2             |  | 2    | 2                | 100        | HR         | ريادة أعمال       | 3 |

متطلب ثقافة اسلامية اختياري (يختار الطالب 2 مقررات من 8 مقررات)

| Course Title                       | المتطلب السابق المقرّر | طبيعة الوحدات |  |       | الوحدات المعتمّدة | رقم المقرّر | رمز المقرّر | اسم المقرّر              | م |
|------------------------------------|------------------------|---------------|--|-------|-------------------|-------------|-------------|--------------------------|---|
|                                    |                        | عمليّ         |  | نظريّ |                   |             |             |                          |   |
| The origins of Islamic culture     | ---                    | 0             |  | 2     | 2                 | 100         | ISLS        | أصول الثقافة الإسلامية   | 1 |
| Studies in the Prophet's biograph  | ---                    | 0             |  | 2     | 2                 | 102         | ISLS        | دراسات في السيرة النبوية | 2 |
| Medical jurisprudence              | ---                    | 0             |  | 2     | 2                 | 109         | ISLS        | الفقه الطبي              | 3 |
| The family in Islam                | ---                    | 0             |  | 2     | 2                 | 104         | ISLS        | الأسرة في الإسلام        | 4 |
| Professional ethics                | ---                    | 0             |  | 2     | 2                 | 105         | ISLS        | أخلاقيات المهنة          | 5 |
| Women and their role developmental | ---                    | 0             |  | 2     | 2                 | 106         | ISLS        | المراة ودورها التنموي    | 6 |
| Economic system                    | ---                    | 0             |  | 2     | 2                 | 107         | ISLS        | النظام الاقتصادي         | 7 |
| Contemporary issues                | ---                    | 0             |  | 2     | 2                 | 108         | ISLS        | قضايا معاصرة             | 8 |

متطلب جامعة اختياري (يختار الطالب 2 مقررات من 5 مقررات)

| Course Title                  | المتطلب السابق المقرّر | طبيعة الوحدات |  |       | الوحدات المعتمّدة | رقم المقرّر | رمز المقرّر | اسم المقرّر                   | م |
|-------------------------------|------------------------|---------------|--|-------|-------------------|-------------|-------------|-------------------------------|---|
|                               |                        | عمليّ         |  | نظريّ |                   |             |             |                               |   |
| Kingdom & Its Pioneering Role | ---                    | 0             |  | 2     | 2                 | 103         | GNCR        | المملكة ودورها الريادي        | 1 |
| Academic Writing Skills       | ---                    | 0             |  | 2     | 2                 | 103         | ARAB        | مهارات الكتابة الأكاديمية     | 2 |
| Fitness and Sport Science     | ---                    | 0             |  | 2     | 2                 | 104         | GNCR        | اللياقة البدنية وعلوم الرياضة | 3 |
| Sustainable Development       | ---                    | 0             |  | 2     | 2                 | 104         | BIO         | التنمية المستدامة             | 4 |
| Lifelong learning skills      | ---                    | 0             |  | 2     | 2                 | 101         | CUET        | مهارات التعلم مدى الحياة      | 5 |



| المقررات الحرة (يختار الطالب 2 مقررات من 4 مقررات) |                       |               |  |      |                  |            |            |                               |   |
|--|-----------------------|---------------|--|------|------------------|------------|------------|-------------------------------|---|
| Course Title                                       | المتطلب السابق المقرر | طبعية الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر                    | م |
|  |                       | عملي          |  | نظري |                  |            |            |                               |   |
| Digital transformation                             | ---                   | 0             |  | 2    | 2                | 101        | IS         | التحول الرقمي                 | 1 |
| Leadership and change management                   | ---                   | 0             |  | 2    | 2                | 102        | ELP        | القيادة وإدارة التغيير        | 2 |
| Volunteering and social responsibility             | ---                   | 0             |  | 2    | 2                | 105        | GNCR       | التطوع والمسؤولية المجتمعية   | 3 |
| Skills to deal with people with disabilities       | ---                   | 0             |  | 2    | 2                | 115        | PSY        | مهارات التعامل مع ذوي الإعاقة | 4 |

| مقررات اللغة الإنجليزية بالجامعة                |                       |               |  |      |                  |            |            |  |   |
|---|-----------------------|---------------|--|------|------------------|------------|------------|--|---|
| Course Title                                    | المتطلب السابق المقرر | طبعية الوحدات |  |      | الوحدات المعتمدة | رقم المقرر | رمز المقرر | اسم المقرر                                 | م |
|   |                       | عملي          |  | نظري |                  |            |            |  |   |
| English language 1                              | ---                   | 0             |  | 20   | 4                | 101        | LNGT       | لغة إنجليزية 1                             | 1 |
| English language 2                              | LNGT101               | 0             |  | 20   | 4                | 102        | LNGT       | لغة إنجليزية 2                             | 2 |
| for Scientific and English Engineering Purposes |                       | 0             |  | 4    | 2                | 103        | LNGT       | اللغة الإنجليزية للأغراض العلمية والهندسية | 3 |
| English for Medical Purposes                    | ---                   | 0             |  | 4    | 2                | 104        | LNGT       | اللغة الإنجليزية للأغراض الصحية            | 4 |
| English for scientific 1 College                | ---                   | 0             |  | 15   | 3                | 105        | LNGT       | اللغة الإنجليزية لكلية العلوم 1            | 5 |
| English for scientific 2 College                | LNGT105               | 0             |  | 15   | 3                | 106        | LNGT       | اللغة الإنجليزية لكلية العلوم 2            | 6 |
| English for non-scientific Colleges             | ---                   | 0             |  | 3    | 3                | 100        | LNGT       | اللغة الإنجليزية للكليات النظرية           | 7 |
| Business English                                | ---                   | 0             |  | 3    | 3                | 108        | LNGT       | اللغة الإنجليزية للأعمال                   | 8 |

## 2- Degree(s) Awarded.

The program awards a Bachelor of Science in Mathematics ( بكالوريوس العلوم في الرياضيات – ) (BSc. in Mathematics - Applied Mathematics Track). The graduation requirements that student has to complete 136 credits approved by the Mathematics program.