

College of Science  
Vice Deanship for Educational and Academic Affairs  
Mathematics Study Plan

# Mathematics Study Plan



## Mathematics Department

2018G-1439H

College of Science  
**Vice Deanship for Educational and Academic Affairs**  
**Mathematics Study Plan**

| 1 <sup>st</sup> Semester (Common First Year) |                       |           |     |           |
|--|-----------------------|-----------|-----|-----------|
| Course Code                                  | Course Title          | Requisite |     | Credits   |
|  |                       | Pre.      | Co. |           |
| ENG 104<br>Or ENG 105<br>Or ENG 106          | English Language      | -         | -   | 6         |
| MATH 101                                     | Differential Calculus | -         | -   | 3         |
| ENT 101                                      | Entrepreneurship      | -         | -   | 1         |
| CHEM 101                                     | General Chemistry     | -         | -   | 4         |
| ARAB 100                                     | Written skills        | -         | -   | 2         |
| <b>Total of Credit Hours</b>                 |                       |           |     | <b>16</b> |

| 2 <sup>nd</sup> Semester (Common First Year) |                             |           |     |                                      |
|--|-----------------------------|-----------|-----|--------------------------------------|
| Course Code                                  | Course Title                | Requisite |     | Credits<br>(Lect.- Exer.-<br>Pract.) |
|  |                             | Pre.      | Co. |                                      |
| ENG 111<br>Or ENG 112<br>Or ENG 113          | English Language            | -         | -   | 6                                    |
| CI 101                                       | University skills           | -         | -   | 3                                    |
| CT 101                                       | Computer Skills             | -         | -   | 3                                    |
| STAT 101                                     | Introduction to Statistics  | -         | -   | 3                                    |
| CHS 101                                      | Fitness and healthy culture | -         | -   | 1                                    |
| <b>Total of Credit Hours</b>                 |                             |           |     | <b>16</b>                            |

| 3 <sup>rd</sup> Semester                   |                                      |           |     |                                      |
|--|--------------------------------------|-----------|-----|--------------------------------------|
| Course Code                                | Course Title                         | Requisite |     | Credits<br>(Lect., Exer.,<br>Pract.) |
|  |                                      | Pre.      | Co. |                                      |
| STAT 105                                   | Statistical Methods                  | STAT 101  | -   | 4(3,2,0)                             |
| CSC 115                                    | Introduction to Programming With C++ | CT 101    | -   | 4(3,0,2)                             |
| MATH 111                                   | Integral Calculus                    | MATH 101  | -   | 4(3,2,0)                             |
| MATH 131                                   | Foundations of Mathematics           | MATH 101  | -   | 4(3,2,0)                             |
| xxx Elective University requirement course |                                      |           | -   | 2 (2,0,0)                            |
| <b>Total of Credit Hours</b>               |                                      |           |     | <b>18</b>                            |

| 4 <sup>th</sup> Semester     |                                    |           |          |                                      |
|------------------------------|------------------------------------|-----------|----------|--------------------------------------|
| Course Code                  | Course Title                       | Requisite |          | Credits<br>(Lect., Exer.,<br>Pract.) |
|                              |                                    | Pre.      | Co.      |                                      |
| MATH 201                     | Differential and Integral Calculus | MATH 111  | -        | 4(3,2,0)                             |
| MATH 202                     | Vector Calculus                    |           | MATH 201 | 4(3,2,0)                             |
| MATH 243                     | Number Theory                      | MATH 131  |          | 4(3,2,0)                             |
| MATH 246                     | Linear Algebra                     | MATH 131  |          | 4(3,2,0)                             |
| <b>Total of Credit Hours</b> |                                    |           |          | <b>16</b>                            |

| 5 <sup>th</sup> Semester                   |  |           |     |                                      |
|--|--|-----------|-----|--------------------------------------|
| Course Code                                | Course Title                           | Requisite |     | Credits<br>(Lect., Exer.,<br>Pract.) |
|  |  | Pre.      | Co. |                                      |
| STAT 216                                   | Actuarial Probability                  | MATH 201  | -   | 4(3,2,0)                             |
| MATH 225                                   | Introduction to Differential Equations | MATH 201  | -   | 4(3,2,0)                             |
| MATH 352                                   | Numerical Analysis (1)                 | MATH 246  | -   | 4(3,2,0)                             |
| MATH 382                                   | Real Analysis (1)                      | MATH 201  | -   | 4(3,2,0)                             |
| xxx Elective University requirement course |  |           | -   | 2 (2,0,0)                            |
| <b>Total of Credit Hours</b>               |  |           |     | <b>18</b>                            |

| 6 <sup>th</sup> Semester                   |                          |                     |     |                                      |
|--|--------------------------|---------------------|-----|--------------------------------------|
| Course Code                                | Course Title             | Requisite           |     | Credits<br>(Lect., Exer.,<br>Pract.) |
|  |                          | Pre.                | Co. |                                      |
| MATH 316                                   | Mathematical Methods     | MATH202 + MATH 225  | -   | 4(3,2,0)                             |
| MATH 343                                   | Group Theory             | MATH 243 + MATH 246 | -   | 4(3,2,0)                             |
| MATH 373                                   | Introduction to Topology | MATH 382            | -   | 4(3,2,0)                             |
| Elective Course*                           |                          |                     | -   | s                                    |
| xxx Elective University requirement course |                          |                     | -   | 2(2,0,0)                             |
| <b>Total of Credit Hours</b>               |                          |                     |     | <b>14+ s</b>                         |

| 7 <sup>th</sup> Semester     |                                    |           |     |                                      |
|------------------------------|------------------------------------|-----------|-----|--------------------------------------|
| Course Code                  | Course Title                       | Requisite |     | Credits<br>(Lect., Exer.,<br>Pract.) |
|                              |                                    | Pre.      | Co. |                                      |
| MATH 425                     | Partial Differential Equations     | MATH 316  | -   | 4(3,2,0)                             |
| MATH 431                     | Combinatorics and Graph Theory (1) | MATH 246  | -   | 4(3,2,0)                             |
| MATH 441                     | Rings and Fields                   | MATH 343  | -   | 4(3,2,0)                             |
| MATH 481                     | Real Analysis (2)                  | MATH 382  | -   | 4(3,2,0)                             |
| Elective Course*             |                                    |           | -   | 3                                    |
| <b>Total of Credit Hours</b> |                                    |           |     | <b>19</b>                            |

| 8 <sup>th</sup> Semester                   |                                       |                          |     |                                      |
|--|---------------------------------------|--------------------------|-----|--------------------------------------|
| Course Code                                | Course Title                          | Requisite                |     | Credits<br>(Lect., Exer.,<br>Pract.) |
|  |                                       | Pre.                     | Co. |                                      |
| MATH 473                                   | Introduction to Differential Geometry | MATH 202 + MATH 246      | -   | 4(3,2,0)                             |
| MATH 487                                   | Complex Analysis                      | MATH 382                 | -   | 4(3,2,0)                             |
| MATH 499                                   | Research Project                      | Completion of 100 credit | -   | 3(3,0,0)                             |
| Elective Course*                           |                                       |                          | -   | 6-s                                  |
| xxx Elective University requirement course |                                       |                          | -   | 2(2,0,0)                             |
| <b>Total of Credit Hours</b>               |                                       |                          |     | <b>19-s</b>                          |

(Lect., Exer., Pract.) = (Lecture, Exercise, Practical)

- The sum of elective hours of program (9 credit hours)
- S: 2 or 3 or 4 credit hours

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**List of the Elective Courses (Student elects 9 credit hours)**

| Course Code                    | Course Title  | Pre-requisite        | Co-requisite | Credits (Lect., Exer., Pract) |
|--------------------------------|---|----------------------|--------------|-------------------------------|
| MATH 379                       | Foundations of Euclidean and Non-Euclidean Geometry | MATH 202 + MATH 246  | -            | 4(3,2,0)                      |
| MATH 391                       | History of Mathematics                              | -                    | -            | 2(2,0,0)                      |
| MATH 426                       | Modeling in Mathematical Biology                    | MATH 225             | -            | 3(3,0,0)                      |
| MATH 433                       | Combinatorics and Graph Theory (2)                  | MATH 431             | -            | 4(3,2,0)                      |
| MATH 436                       | Mathematical Logic                                  | MATH 131             | -            | 4(3,2,0)                      |
| MATH 442                       | Applications of Algebra                             | MATH 441             | -            | 4(3,2,0)                      |
| MATH 453                       | Numerical Analysis (2)                              | MATH 352             | -            | 4(3,2,0)                      |
| MATH 456                       | Introduction to Mathematical Programming            | MATH 246             | -            | 3(2,2,0)                      |
| MATH 466                       | Dynamical Systems and Chaos                         | MATH 316             | -            | 4(3,2,0)                      |
| MATH 482                       | Multivariable Calculus                              | MATH 246 + MATH 481  | -            | 3(2,2,0)                      |
| PHYS 101                       | General Physics (1)                                 | -                    | -            | 4(3,0,2)                      |
| PHYS 102                       | General Physics (2)                                 | -                    | -            | 4(3,0,2)                      |
| ECON 101                       | Principles of Microeconomics                        | -                    | -            | 3(3,0,0)                      |
| ECON 102                       | Principles of Macroeconomics                        | ECON 101             | -            | 3(3,0,0)                      |
| MGT 101                        | Management and Business Principles                  | -                    | -            | 3(3,0,0)                      |
| ACTU 371                       | Financial Mathematics                               | MATH 111 OR MATH 106 | -            | 4(3,2,0)                      |
| CSC 202                        | Computer Programming with MATLAB                    | CSC 115              | -            | 3(2,0,2)                      |
| STAT 328                       | Statistical Packages                                | STAT 105             | -            | 3(2,0,2)                      |
| IE 222                         | Industrial Operations Analysis (1)                  | -                    | -            | 3                             |
| A basket full of three courses |   | 9 credit hours       |              |                               |
| ACCT 201                       | Principles of Accounting and Financial Reporting    | -                    | -            | 3(3,0,0)                      |
| FIN 200                        | Principles of Finance                               | ACCT 201             | -            | 3(3,0,0)                      |
| ACTU 262                       | Actuarial Corporate Finance                         | FIN 200              | -            | 3(3,0,0)                      |

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**List of the Elective Courses of the University Requirements (Student elects 8 credit hours)**

| Course Code | Course Title                            | Pre-requisite | Credits (Lect., Exer., Pract.) |
|-------------|---|---------------|--------------------------------|
| IC 100      | Studies in the Biography of the Prophet | -             | 2(2,0,0)                       |
| IC 101      | Introduction of Islamic Culture         | -             | 2(2,0,0)                       |
| IC 102      | Islam and Building up the Society       | -             | 2(2,0,0)                       |
| IC 103      | Economic System in Islam                | -             | 2(2,0,0)                       |
| IC 104      | Political system in Islam               | -             | 3 (2,0,1)                      |
| IC 105      | Human Rights                            | -             | 3 (2,0,1)                      |
| IC 106      | Islamic Jurisprudence                   | -             | 2(2,0,0)                       |
| IC 107      | Ethics of Occupation                    | -             | 2(2,0,0)                       |
| IC 108      | Contemporary Issues                     | -             | 2(2,0,0)                       |
| IC 109      | Woman and Her Developmental Role        | -             | 2(2,0,0)                       |

**List of service courses to Other Specialization and colleges.**

| Course Code | Course Title                       | Pre-requisite  | Credits (Lect., Exer., Pract.) | Specialization / College of               |
|-------------|------------------------------------|--|--------------------------------|---|
| MATH 104    | General mathematics                | MATH 101   | 3(3,0,0)                       | Agriculture, Architecture and Planning    |
| MATH 106    | Integral Calculus                  |  | 3(3,0,0)                       | /Engineering and Computer Sciences        |
| MATH 107    | Vectors and matrices               |  | 3(3,0,0)                       | Engineering                               |
| MATH 111    | Integral Calculus                  |  | 4 (3,2,0)                      | STAT, OPER, PHYS, CHEM, GPH               |
| MATH 151    | Discrete Math                      |  | 3(3,0,0)                       | /Computer Sciences                        |
| MATH 200    | Differential and Integral Calculus | MATH 111   | 3(3,0,0)                       | GPH/Computer Sciences                     |
| MATH 201    | Differential and Integral Calculus | MATH 111   | 4(3,2,0)                       | OPER + STAT                               |
| MATH 203    | Integral and Differential Calculus | MATH 106 + MATH 107  | 3(3,0,0)                       | /Engineering                              |
| MATH 204    | Differential Equations             | MATH 200 <b>OR</b> MATH 201 <b>OR</b> MATH 203   | 3(3,0,0)                       | GPH/ Engineering, Computer Sciences       |
| MATH 209    | Differential Equations             |  | 4 (3,2,0)                      | PHYS                                      |
| MATH 244    | Linear Algebra                     | MATH 111 <b>OR</b> MATH 106 <b>OR</b> MATH 107   | 3(3,0,0)                       | OPER, STAT/Engineering, Computer Sciences |
| MATH 254    | Numerical Methods                  | MATH 107 <b>OR</b> MATH 202 <b>OR</b> MATH 244) +(CSC 101 <b>OR</b> CSC 206 <b>OR</b> CSC 207) | 3(3,0,0)                       | /Engineering                              |
| MATH 211    | Calculus for Chemists              | MATH 101   | 3(3,2,0)                       | CHEM                                      |
| MATH 205    | Differential and Integral Calculus | MATH 106   | 3(3,2,0)                       | GPH/ Computer Sciences                    |