

## B.S. in Data Science and Engineering

### Four-year Academic Plan

#### Digital/Business Foundation

##### Freshman Year

| Course   | Type | Title                              | LT | LB | Cr |
|----------|------|------------------------------------|----|----|----|
| BUS 200  | DF   | Business & Entrepreneurship        | 3  | 0  | 3  |
| ENGL 101 | GS   | Introduction to Academic Discourse | 3  | 0  | 3  |
| IAS 111  | GS   | Belief and its Consequences        | 2  | 0  | 2  |
| ICS 104  | DF   | Intro. to Programm. in Python & C  | 2  | 3  | 3  |
| MATH 101 | MS   | Calculus I                         | 4  | 0  | 4  |
| PE 101   | GS   | Health & Physical Education I      | 0  | 2  | 1  |
| Total    |      |                                    | 14 | 5  | 16 |

##### Sophomore Year

| Course   | Type | Title                               | LT | LB | Cr |
|----------|------|-------------------------------------|----|----|----|
| DATA 211 | DF   | Intro. to Data Science              | 3  | 0  | 3  |
| ENGL 214 | GS   | Academic & Prof. Communication      | 3  | 0  | 3  |
| IAS 212  | GS   | Professional Ethics and Governance  | 2  | 0  | 2  |
| MATH 201 | MS   | Calculus III                        | 3  | 0  | 3  |
| MATH 208 | MS   | Diff. Eq. & Linear Algebra          | 3  | 0  | 3  |
| STAT 201 | CR   | Prob. & Stat. for Eng. & Scientists | 3  | 1  | 3  |
| Total    |      |                                     | 17 | 1  | 17 |

##### Junior Year

| Course   | Type | Title                            | LT | LB | Cr |
|----------|------|----------------------------------|----|----|----|
| DATA 301 | CR   | Data, Inference, and Decisions   | 3  | 0  | 3  |
| DATA 311 | CR   | Data Engineering                 | 3  | 0  | 3  |
| DATA 321 | CR   | Matrix Theory for Data Science   | 3  | 0  | 3  |
| DATA 361 | CR   | Fundamentals of Database Systems | 3  | 0  | 3  |
| DATA xxx | CE   | Data Science Elective I          | 3  | 0  | 3  |
| IAS XXX  | GS   | Islamic/Arabic Elective          | 2  | 0  | 2  |
| Total    |      |                                  | 17 | 0  | 17 |

##### Summer Session

##### Senior Year

| Course   | Type | Title                         | LT | LB | Cr |
|----------|------|-------------------------------|----|----|----|
| DATA 411 | CR   | Senior Design Project I       | 0  | 1  | 0  |
| DATA 421 | CR   | Optimization for Data Science | 3  | 0  | 3  |
| ICS 485  | CR   | Machine Learning              | 3  | 0  | 3  |
| DATA xxx | CE   | Data Science Elective III     | 3  | 0  | 3  |
| XE xxx   | TE   | Technical Elective I          | 3  | 0  | 3  |
| XE xxx   | TE   | Technical Elective II         | 3  | 0  | 3  |
| Total    |      |                               | 15 | 1  | 15 |

| Course   | Type | Title                          | LT | LB | Cr |
|----------|------|--------------------------------|----|----|----|
| ENGL 102 | GS   | Introduction to Report Writing | 3  | 0  | 3  |
| IAS 121  | GS   | Language Foundation            | 2  | 0  | 2  |
| ICS 108  | CR   | Object-Oriented Programming    | 3  | 3  | 4  |
| MATH 102 | MS   | Calculus II                    | 4  | 0  | 4  |
| MATH 210 | MS   | Intro. to Sets and Structures  | 3  | 0  | 3  |
| Total    |      |                                | 15 | 3  | 16 |

| Course   | Type | Title                             | LT | LB | Cr |
|----------|------|-----------------------------------|----|----|----|
| COE 292  | DF   | Intro. to Artificial Intelligence | 3  | 0  | 3  |
| DATA 201 | CR   | Probability for Data Science      | 3  | 0  | 3  |
| ICS 202  | CR   | Data Structures and Algorithms    | 3  | 3  | 4  |
| SWE 206  | CR   | Intro. to Software Engineering    | 2  | 3  | 3  |
| GS XXX   | GS   | GS Elective                       | 3  | 0  | 3  |
| Total    |      |                                   | 14 | 6  | 16 |

| Course   | Type | Title                                  | LT | LB | Cr |
|----------|------|----------------------------------------|----|----|----|
| CGS 392  | GS   | Career Essentials                      | 0  | 2  | 1  |
| DATA 322 | CR   | Mathematical Modeling for Data Science | 3  | 0  | 3  |
| DATA 341 | CR   | Statistical Methods for Data Science   | 3  | 0  | 3  |
| DATA 351 | CR   | Human Contexts and Ethics of Data      | 3  | 0  | 3  |
| DATA xxx | CE   | Data Science Elective II               | 3  | 0  | 3  |
| SWE 363  | CR   | Web Engineering and Development        | 3  | 0  | 3  |
| Total    |      |                                        | 15 | 2  | 16 |

|          |    |                 |   |   |   |
|----------|----|-----------------|---|---|---|
| DATA 399 | CR | Summer Training | 0 | 0 | 1 |
|----------|----|-----------------|---|---|---|

| Course   | Type | Title                    | LT | LB | Cr |
|----------|------|--------------------------|----|----|----|
| DATA 412 | CR   | Senior Design Project II | 0  | 6  | 3  |
| DATA 471 | CR   | Big Data Analytics       | 3  | 0  | 3  |
| STAT 460 | CR   | Time Series              | 3  | 0  | 3  |
| XE xxx   | TE   | Technical Elective III   | 3  | 0  | 3  |
| XE xxx   | TE   | Technical Elective IV    | 3  | 0  | 3  |
| Total    |      |                          | 12 | 6  | 15 |

**Total Credit Hours 129**