# Degree and Study Plan

College: Science
Department: Computer Science[1]
Cohorts: 2016
Degree: Bachelor of Science
Major: Computer Science
Specialization:

| **Summary of Credits:** | |
|---|---|
| **University Requirements (UR)** | **6** |
| Foundation Program Arabic | NC+ |
| Arabic (or Arabic for Non-Arabic Speakers) | 3 |
| Contemporary Omani Society (or Omani Contemporary Society – 2cr) | 1 |
| Oman & Islamic Civilization or Islamic Culture | 2 |
| **University Electives (UE)** See List A | **6** |
| **College Requirements (CR)** See list B | **3** |
| **College Electives (CE)** See list C | **16** |
| **Departmental Requirements (DR)** See list D | **14** |
| **Departmental Electives (DE)** See list E | **9** |
| **Major Requirements (AR)** See list F | **43** |
| **Major Electives (AE)** See list G | **25** |
| **Specialization Requirements (SR)** See list H | **0** |
| **Specialization Electives (SE)** See list I | **0** |
| **Minor Requirements (IR)**++ See list J | **0** |
| **Minor Electives (IE)** ++ See list K | **0** |
| **TOTAL** | **122** |

+ Not credited.

++Minor is optional: minimum total credits to earn a Minor are 18. Courses counting towards an approved Minor may substitute courses listed as Major Electives (List G) but no more than 8 credits counting towards the Major degree (lists C, D, E, F) may count towards a Minor.

For reference contact: **Prof. Khaled Day** Ext. **2231**

HOD: **Prof. Abderezak Touzene** Date: 12 December 2023

Dean: **Dr. Talal Al-Hosni** Date: 11.03.2024

Admission and Registration: Date:

[1] Accredited by the Computing Accreditation Commission of ABET, http://www.abet.org

# Department of Computer Science - Study Plan for Cohort 2016

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 1 Fall** | ARAB1001 or ARAB1019 | Arabic<br>Arabic for Non-Arabic Speakers | 3 | | UR |
| | COMP2101 | Introduction to Computer Science | 4 | (FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604) and (FPCS0101 or FPCS0102) | CE |
| | LANC2058 | Communication in Science | 3 | FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 | CR |
| | MATH2107 | Calculus I | 4 | (FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604) and (FPMT0105 or FPMT0109) | CE |
| | **Total** | | **14** | | |

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 2 Spring** | COMP2102 | Problem Solving and Programming | 3 | COMP2101 | DR |
| | ECCE3206 | Digital Logic Design | 3 | | AR |
| | MATH2108 or MATH2109 | Calculus II | 3 | MATH2107 | AR |
| | STAT2103 or STAT2102 | Probability for Engineers | 3 | STAT2101 / (MATH2108 or MATH2109)* | AR |
| | | College Elective | 4 | | CE |
| | **Total** | | **16** | | |

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 3 Fall** | COMP3200 or COMP2202 | Object Oriented Programming | 3 | COMP2102 and LANC2058 | DR |
| | COMP3501 | Computer Organization & Assembly Language | 3 | COMP2102 and ECCE3206 and LANC2058 | AR |
| | MATH3340 | Discrete Mathematics for Computer Science | 3 | MATH2107 and COMP2101 and LANC2058 | AR |
| | PHYS2101 | General Physics I | 4 | (FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604) and (FPMT0105 or FPMT0109) | CE |
| | | University Elective 1 | 2 | | UE |
| | **Total** | | **15** | | |

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 4 Spring** | COMP3203 | Introduction to Data Structures & Algorithms | 3 | (COMP3200 or COMP2202) and MATH3340 and LANC2058 | DR |
| | COMP3401 | Introduction to Software Engineering | 4 | COMP3203 | DR |
| | COMP3700 | Introduction to Web Computing | 3 | (COMP2202 and LANC2058) / COMP3205* | AR |
| | MATH2202 or MATH2201 | Linear Algebra I | 3 | LANC2058 | AR |
| | | Major Elective 1 | 3 | | AE |
| | **Total** | | **16** | | |

## Department of Computer Science Study Plan for Cohort 2016

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 5 Fall** | COMP3100 or COMP4100 | Ethical and Social Issues for Computing | 1 | COMP3401 and LANC2058 | DR |
| | COMP4201 or COMP3205 | Introduction to Database Systems | 3 | COMP3203 | AR |
| | COMP4501 | Fundamentals of Operating Systems | 3 | COMP3203 and COMP3501 | AR |
| | HIST1010 or ISLM1010 | Oman & Islamic Civilization or Islamic Culture | 2 | | UR |
| | | Major Elective 2 | 3 | | AE |
| | | Major Elective 3 | 3 | | AE |
| | **Total** | | **15** | | |

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 6 Spring** | COMP4204 | Advanced Data Structures and Alg. | 3 | COMP3203 | AR |
| | COMP4601 or COMP3600 | Introduction to Intelligent Systems | 3 | (COMP3203 or COMP3603) and LANC2058 | AR |
| | SOCY1001 or SOCY1007* | Contemporary Omani Society Omani Contemporary Society (2 Cr) | 1 | | UR |
| | | Departmental Elective 1 | 3 | | DE |
| | | Major Elective 4 | 4 | | AE |
| | | University Elective 2 | 2 | | UE |
| | **Total** | | **16** | | |

*For non-Omani citizens only

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Summer** | COMP4445 | Summer Training | 0 | COMP4100 | AR |
| | **Total** | | **0** | | |

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 7 Fall** | COMP4502 or COMP3502 | Networks & Communication | 3 | COMP3203 | AR |
| | COMP5101 | Comparative Programming Languages | 3 | COMP3203 and COMP3501 | AR |
| | | Departmental Elective 2 | 3 | | DE |
| | | Major Elective 5 | 3 | | AE |
| | | Major Elective 6 | 3 | | AE |
| | **Total** | | **15** | | |

| | Course Code | Course Title | Cr. | Pre-Requisite/Co-Requisite* | Cat. |
|---|---|---|---|---|---|
| **Semester 8 Spring** | COMP5900 | Project in Computer Science | 4 | AR | AR |
| | | Departmental Elective 3 | 3 | | DE |
| | | Major Elective 7 | 3 | | AE |
| | | Major Elective 8 | 3 | | AE |
| | | University Elective 3 | 2 | | UE |
| | **Total** | | **15** | | |

## Department of Computer Science – Degree Plan for Cohort 2016

| Degree Plan : 122 credits | | | |
|---|---|---|---|
| **Course code** | **Cr** | **Course Title** | **Prerequisites (Co-Requisite)** |
| **University Requirements: 12 Credits** | | | |
| ARAB1001 or ARAB1019 | 3 | Arabic<br>Arabic for Non-Arabic Speakers | |
| HIST1010 or ISLM1010 | 2 | Oman & Islamic Civilization or Islamic Culture | |
| SOCY1001 or SOCY1007 * | 1 | Omani Contemporary Society<br>Omani Contemporary Society (2 Cr) | |
| | 6 | University Electives | |

* For non-Omani citizens only

## Department of Computer Science – Degree Plan for Cohort 2016

### LIST A: University Electives (6 Credits)

See SQU Deanship of Admission and Registration website for the list of University Electives

Available at: https://sis.squ.edu.om/sis/webreg/3s/electiveTimeTable.jsp

## Department of Computer Science – Degree Plan for Cohort 2016

### LIST B: COLLEGE REQUIRMENTS (3 Credits)

| Code | Title | Credits | Pre-Requisite / Co-Requisite* |
|---|---|---|---|
| LANC2058 | Communication in Science | 3 | FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 |
| **Total** | | **3** | |

## Department of Computer Science – Degree Plan: for Cohort 2016

### LIST C: COLLEGE ELECTIVES (16 Credits)

| Code | Title | Credits | Pre-Requisite / Co-Requisite* |
|---|---|---|---|
| BIOL2101 | General Biology 1 | 4 | FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 |
| CHEM2101 | General Chemistry 1 | 4 | ( FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 ) and (FPMT 0105 or FPMT0109) |
| COMP2101† | Introduction to Computer Science | 4 | ( FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 ) and (FPCS0101 or FPCS0102) |
| ERSC2101 | Introduction to Geology | 4 | FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 |
| MATH2107† | Calculus I | 4 | ( FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 ) and (FPMT0105 or FPMT0109) |
| PHYS2101† | General Physics I | 4 | ( FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 ) and ( FPMT 0105 or FPMT0109) |
| STAT2101 | Introduction to Statistics | 4 | (FPE0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604) and (FPMT0105 or PMT0109) |

† COMP2101, MATH2107, and PHYS2101 are key Pre-Requisite courses for Computer Science Major Requirements. Credits taken in excess of 16 can be counted as Major Electives (List G)

## Department of Computer Science – Degree Plan for Cohorts 2016

## LIST D: DEPARTMENTAL REQUIREMENTS (14 Credits)

| Code | Title | Credits | Pre-Requisite / Co-Requisite* |
|---|---|---|---|
| COMP2102 | Problem Solving and Programming | 3 | COMP2101 |
| COMP3100 or COMP4100 | Ethical and Social Issues for Computing Profession | 1 | COMP3401 and LANC2058 |
| COMP3200 or COMP2202 | Object Oriented Programming | 3 | COMP2102 and LANC2058 |
| COMP3203 | Introduction to Data Structures and Algorithms | 3 | (COMP3200 or COMP2202) and MATH3340 and LANC2058 |
| COMP3401 | Introduction to Software Engineering | 4 | COMP3203 |
| **Total** | | **14** | |

## LIST E: DEPARTMENTAL ELECTIVES (9 Credits)

| Code | Title | Credits | Pre-Requisite / Co-Requisite* |
|---|---|---|---|
| COMP2105 | Introduction to Problem Solving with Visual Basic | 3 | COMP2101 |
| COMP2206 | Introduction to Java | 3 | COMP3200 or COMP2202 |
| COMP3204 | Advanced Java Programming | 3 | (COMP3200 or COMP2202) and LANC2058 |
| COMP3302 | Introduction to Multimedia | 3 | COMP3200 or COMP2202 |
| COMP3601 | Bioinformatics Algorithms | 3 | BIOL2101 and COMP2101 |
| COMP3702 | Principles of Web Applications | 3 | COMP3700 and LANC2058 |
| COMP4202 | Database Development | 3 | COMP4201 or COMP3205 |
| COMP4205 | Competitive Programming | 3 | COMP3203 |
| COMP4206 | Mobile Applications Development | 3 | COMP3203 |
| COMP4212 | Introduction to Information Retrieval | 3 | COMP3202 or COMP3203 |
| COMP4300 | Computer Graphics I | 3 | (COMP3202 or COMP3203) and (MATH2202 or MATH2201) |
| COMP4402 | Software Testing | 3 | COMP3401 |
| COMP4404 | Software Project Management | 3 | COMP3401 |
| COMP4471 | Computational Methods | 3 | COMP2101 and (MATH2108 or MATH2109) and (MATH2202 or MATH2201) |
| COMP4504 | Wireless Networks | 3 | COMP4502 or COMP3502 |
| COMP4506 | Systems and Networks Programming | 3 | COMP4501 and (COMP4502 or COMP3502) |
| COMP4603 | Machine Learning | 3 | (COMP3203 or COMP3603) and (MATH2202 or MATH2201) |
| COMP4604 | Digital Image Processing | 3 | COMP4601 or COMP3600 |
| COMP4701 | Web Application Development | 3 | COMP3700 and (COMP4201 or COMP3205) |
| COMP4702 | Advanced Web Applications Development | 3 | COMP3702 |
| COMP4703 | Web Data Mining and Social Networking | 3 | COMP3700 and (STAT2102 or STAT2103) |
| COMP5204 | Computer Science Special Topics I | 3 | Instructor Consent |
| COMP5302 | Digital Image Processing | 3 | COMP3202 or COMP3203 |
| COMP5400 | Software Architecture and Design | 3 | COMP3401 |

| Code | Title | Credits | Pre-Requisite / Co-Requisite* |
|---|---|---|---|
| COMP5401 | Requirement Engineering | 3 | COMP3401 |
| COMP5504 | Distributed Systems | 3 | COMP4506 |
| COMP5506 | Wireless Networks and Mobile Computing | 3 | COMP4501 and (COMP4502 or COMP3502) |
| COMP5507 | Cryptography and Network Security | 3 | COMP3203 and (COMP4502 or COMP3502) |
| COMP5508 | Interconnection Networks for Multiprocessor and Multicore Systems | 3 | COMP4502 or COMP3502 |
| COMP5509 | Penetration Testing and Ethical Hacking | 3 | COMP4507 or COMP4509 |
| COMP5511 | Computer Forensics | 3 | COMP4509 |
| COMP5521 | Finite Automata & Formal Languages | 3 | COMP3203 |
| COMP5522 | Compiler Construction | 3 | COMP3501 and COMP5521 |
| COMP5603 or COMP4605 | Computer Vision | 3 | COMP4603 |
| COMP5605 | Mobile Robotics | 3 | COMP3600 |
| COMP5701 | Web Services | 3 | COMP3401 and COMP3700 |
| COMP5702 | Semantic Web | 3 | COMP4701 |
| COMP5704 | Web Data Mining and Knowledge Discovery | 3 | (COMP4701 or COMP3702) and (STAT2102 or STAT2103) |

Credits taken in excess of 9 can be counted as Major Electives (List G)

## LIST F: MAJOR REQUIREMENTS (43 Credits)

| Code | Title | Credits | Pre-Requisite / Co-Requisite* |
|---|---|---|---|
| **Computer Science: 31** | | | |
| COMP3501 | Computer Organization & Assembly Language | 3 | COMP2102 and ECCE3206 and LANC2058 |
| COMP3700 | Introduction to Web Computing | 3 | (COMP2202 and LANC2058) / COMP3205* |
| COMP4201 or COMP3205 | Introduction to Database Systems | 3 | COMP3203 |
| COMP4204 | Advanced Data Structures and Algorithms | 3 | COMP3203 |
| COMP4445 | Summer Training | 0 | COMP4100 |
| COMP4501 | Fundamentals of Operating Systems | 3 | COMP3203 and COMP3501 |
| COMP4502 or COMP3502 | Networks & Communication | 3 | COMP3203 |
| COMP4601 or COMP3600 | Introduction to Intelligent Systems | 3 | (COMP3203 or COMP3603) and LANC2058 |
| COMP5101 | Comparative Programming Languages | 3 | COMP3203 and COMP3501 |
| COMP5900 | Project in Computer Science | 4 | COMP4100 + Completion of 90 credits |
| ECCE3206 | Digital Logic Design | 3 | |
| **Math: 12 credits** | | | |
| MATH2108 or MATH2109 | Calculus II | 3 | MATH2107 |
| MATH2202 or MATH2201 | Linear Algebra I | 3 | LANC2058 |
| MATH3340 | Discrete Mathematics for Computer Science | 3 | MATH2107 and COMP2101 and LANC2058 |
| STAT2103 or STAT2102 | Probability for Engineers | 3 | STAT2101 / (MATH2108 or MATH2109)* |
| **Total** | | **43** | |

## Department of Computer Science – Degree Plan for Cohort 2016

## LIST G: MAJOR ELECTIVES (AR) (25 Credits)

Student should take at least 6 credits from other departments in the College of Science.
Student can take at most 2 courses from other colleges (CIVIL5150, ECCE2016, ECCE4227, ECCE4242, ECCE5242 and GEOG4891).

"All College of Science courses not used for required courses (Lists A, B, C, D, E, F, H and I) can be taken as major electives".

Refer to the Major Electives Page on the College Website:

https://www.squ.edu.om/science/Academic-Programs/Undergraduate-Programs/Major-Electives

## LISTS J & K: MINOR REQUIRMENTS AND ELECTIVES (18 Credits)

### Minors Available to Computer Science Majors

Refer to the Minor page on the College Website to see the available minors and their requirements:

https://www.squ.edu.om/science/Academic-Programs/Undergraduate-Programs

* Students are required to complete 18 Credits in the minor courses to qualify for a minor.

* Courses counting towards an approved Minor may substitute courses listed as Major Electives (List G) but no more than 8 credits counting towards the Major degree (lists C, D, E, F) may count towards a Minor.

* Students should take a minor different from their major.

For reference contact: **Prof. Khaled Day** Ext. **2231**

Approved by Dean of Science: **Dr. Talal Al-Hosni** Date: 11.03.2024

Office of Admissions & Registration: _____

Confirmed: _____