### ATTACHMENT 5.

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**T6. Course Specifications**

Computer Organization And Assembly Language

(COMP 2410)

**Course Specifications**

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| Institution King Saud University Date 1.01.2019 |
| College/Department Community College |

A. Course Identification and General Information

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| 1. Course title and code: Computer organization and assembly language (COMP 2410) |
| 2. Credit hours 3 |
| 3. Program(s) in which the course is offered.  (If general elective available in many programs indicate this rather than list programs)  Computer science program |
| 4. Name of faculty member responsible for the course  **Dr. Mohammed Al-Maitah** |
| 5. Level/year at which this course is offered : Level 4 |
| 6. Pre-requisites for this course (if any)  CT 1202 |
| 7. Co-requisites for this course (if any) |
| 8. Location if not on main campus  In a building college |
| 9. Mode of Instruction (mark all that apply)  100%  X  a. traditional classroom What percentage?  b. blended (traditional and online) What percentage?  c. e-learning What percentage?  d. correspondence What percentage?  f. other What percentage?  Comments: Course delivery contains 2 hours for theory (Lectures) and 2 Lab’s hours. |

B Objectives

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| 1. What is the main purpose for this course?   This course offers a clear and comprehensive survey about Computer Organization And Assembly Language, It introduce main components and principles of a computer main function and use of a MARIE, A **M**achine **A**rchitecture that is **R**eally **I**ntuitive and **E**asy through an integrated presentations of fundamental concepts and principles |
| 2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)  This course provides for the first time this semester:  - Use of modern references and simulation software. |

C. Course Description (Note: General description in the form used in Bulletin or handbook)

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| Course Description:  This course offers a clear and comprehensive survey about Computer Organization and Assembly Language. It introduce the inner working of a modern digital compute through an integrated presentations of fundamental concepts and principles |

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| 1. Topics to be Covered | | |
| List of Topics | No. of  Weeks | Contact hours |
| Numbering Systems (Data Representation in Computer Systems) and arithmetic operations (1’s and 2’s Complement) | 1 | 4 |
| Binary Logic and Gates | 1 | 4 |
| Boolean Algebra and Kmaps | 1 | 4 |
| Combinational Circuits, Adders, substructures, selecting. | 1 | 4 |
| Sequential Circuits | 1 | 4 |
| The Von Neumann model, Fetch-Decode-Execute cycle, and Input/Output Subsystem | 1 | 4 |
| MARIE, A Machine Architecture that is Really Intuitive and Easy, The Architecture, Registers and Buses | 1 | 4 |
| The Instruction Set Architecture, The fundamental MARIE instructions | 2 | 8 |
| Register Transfer Language (RTL), Instructions Set format. Commands, Design Decisions for Instruction Sets, Number of operands and Instruction Length, Expanding Opcodes and Programs. | 1 | 4 |
| Addressing modes, effective address, Immediate addressing, Direct addressing, Register addressing, Indirect addressing, Register indirect addressing, Indexed addressing, Based addressing, Stack addressing, | 1 | 4 |
| Fundamentals of Microprocessor Interfacing , Buses Buffering | 1 | 4 |
| Memory Interfacing | 1 | 4 |
| Design of Arithmetic and logic unit | 1 | 4 |
| Revision | 1 | 4 |

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| 2. Course components (total contact hours and credits per semester): | | | | | | |
|  | Lecture | Tutorial | Laboratory  or Studio | Practical | Other: | Total |
| Contact  Hours | 30 |  | 30 |  |  | 60 |
| Credit | 2 |  | 1 |  |  | 3 |

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| 3. Additional private study/learning hours expected for students per week.  N/A |

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| 4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy |
| On the table below are the five NQF Learning Domains, numbered in the left column.  **First**, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.) |

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| **Code**  **#** | **NQF Learning Domains**  **And Course Learning Outcomes** | **Course Teaching**  **Strategies** | **Course Assessment**  **Methods** |
| **1.0** | **Knowledge** | | |
| 1.1 | Master the skills of the numbering systems and mathematical foundations. | * Lectures and discussions * Focus on the practical side. | -Exams and Quiz's   - Implementation of some case studies.  - Students activities in the class.  - Homework's |
| 1.2 | Explain how to analyze and understand the behavior of combinational digital circuits. |
| 1.3 | Identify the concepts behind computer organization and computer architecture |
| 1.4 | Describe the fundamentals of Instruction Set Architecture and MARIE instructions as well as the Register Transfer Language. |
| **2.0** | **Cognitive Skills** | | |
| 2.1 | Interpret and develop models of computer system design. | - The use of modern scientific references and focus on the practical side.     - Work together as a team to resolve some issues.  - Brain storming | -Exams and Quiz's  - Student participation during the semester. - Practical **e**xams and quizzes. |
| 2.2 | Analyze and interpret aspects of computer organization and computer architecture and their contexts. |
| **3.0** | **Interpersonal Skills & Responsibility** | | |
| 3.1 | Developing the spirit of teamwork and the ability to take responsibility | - Explain the importance of the course and its relationship to the program. - Importance of the course in the community. - The importance of course after graduation. - Group Discussions. | - Participation during the explanation of the course.. - Attend the office hours. |
| 3.2 | Develop the student’s skills in professional ethics. |
| **4.0** | **Communication, Information Technology, Numerical** | | |
| 4.1 | Use simulation programs and design application to create models and solve problems. | - Give students homework and need to use modern technology to solve during the semester.  - Cooperative learning  - Problem solving  - Group Discussions | - Student activity in lecture and lab.  Quizzes.  - Home works  - Presentations  - Practical exams |
| **5.0** | **Psychomotor** | | |
| 5.1 | Not applicable | Not applicable | Not applicable |
| 5.2 | Not applicable | Not applicable | Not applicable |

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| 5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.) | | | | | | | | | | | | |
| **Course**  **LOs #** | **Program Learning Outcomes**  **(Use Program LO Code #s provided in the Program Specifications)** | | | | | | | | | | | |
| **1.1** | **2.1** | **2.2** | **2.3** | **3.1** | **3.2** | **4.1** |  |  |  |  |  |
| **1.1** | √ |  |  |  |  |  |  |  |  |  |  |  |
| **1.2** | √ |  |  |  |  |  |  |  |  |  |  |  |
| **1.3** | √ |  |  |  |  |  |  |  |  |  |  |  |
| **1.4** | √ |  |  |  |  |  |  |  |  |  |  |  |
| **2.1** |  | √ | √ | √ |  |  |  |  |  |  |  |  |
| **2.2** |  | √ | √ | √ |  |  |  |  |  |  |  |  |
| **3.1** |  |  |  |  | √ | √ |  |  |  |  |  |  |
| **3.2** |  |  |  |  | √ | √ |  |  |  |  |  |  |
| **4.1** |  |  |  |  |  |  | √ |  |  |  |  |  |

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| 6. Schedule of Assessment Tasks for Students During the Semester | | | |
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| 1 | Quiz | 3-4 | 5% |
| 2 | First exam | 6 | 15% |
| 3 | Quiz | 5-12 | 5% |
| 4 | Second exam | 12 | 15% |
| 5 | Project | 13 | 10% |
| 6 | Homework’s | 3-13 | 5% |
| 7 | Lab assignments | 3-14 | 5% |
| 8 | Final exam |  | 40% |

D. Student Academic Counseling and Support

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| 1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)  - 5 office hours.  - Students E-mail.  - Teacher website. - The role of the academic advisor in the department.  - Use the LMS. |

E Learning Resources

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| 1. List Required Textbooks The Essentials of Computer Organization and Architecture Hardcover – 14 Apr 2014 by [Linda Null](http://www.amazon.co.uk/s/ref=dp_byline_sr_book_1?ie=UTF8&text=Linda+Null&search-alias=books-uk&field-author=Linda+Null&sort=relevancerank) , [Julia Lobur](http://www.amazon.co.uk/s/ref=dp_byline_sr_book_2?ie=UTF8&text=Julia+Lobur&search-alias=books-uk&field-author=Julia+Lobur&sort=relevancerank). |
| 2. List Essential References Materials (Journals, Reports, etc.)   * “Computer Organization and Design:The Hardware/Software Interface” by David A. Patterson and John L. Hennessy * “Computer Organization” by Carl Hamachar, Zvonco Vranesic and Safwat Zaky.  Computer Organization and Architecture: Designing for Performance, [William Stallings](http://www.amazon.co.uk/William-Stallings/e/B000APXR9Q/ref=dp_byline_cont_book_1).Principles of Computer Organization and Assembly Language 1st Edition, [Patrick Juola](http://www.amazon.com/Patrick-Juola/e/B001HMQRDY/ref=dp_byline_cont_book_1).  * Computer Organization Assembly Language (2nd Edition), [Thorne](http://www.amazon.com/s/ref=dp_byline_sr_book_1?ie=UTF8&text=Thorne&search-alias=books&field-author=Thorne&sort=relevancerank). |
| 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)   * “Computer Organization and Design:The Hardware/Software Interface” by David A. Patterson and John L. Hennessy * “Computer Organization” by Carl Hamachar, Zvonco Vranesic and Safwat Zaky.  Computer Organization and Architecture: Designing for Performance, [William Stallings](http://www.amazon.co.uk/William-Stallings/e/B000APXR9Q/ref=dp_byline_cont_book_1).Principles of Computer Organization and Assembly Language 1st Edition, [Patrick Juola](http://www.amazon.com/Patrick-Juola/e/B001HMQRDY/ref=dp_byline_cont_book_1). Computer Organization Assembly Language (2nd Edition), [Thorne](http://www.amazon.com/s/ref=dp_byline_sr_book_1?ie=UTF8&text=Thorne&search-alias=books&field-author=Thorne&sort=relevancerank). |
| 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.  <http://www.csie.ntu.edu.tw/~cyy/courses/assembly/05fall/news/>  <http://freecomputerbooks.com/langAssemblyBooks.html>  http://c2.com/cgi/wiki?LearningAssemblyLanguage |
| 5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  Interactive Course through LMS |

F. Facilities Required

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| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.) |
| 1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)  - The lecture hall with a capacity of 20 students. - Computer lab has Pc for each student. |
| 2. Computing resources (AV, data show, Smart Board, software, etc.)  - A computer for each student in the lab. - Smart board.  - e-podium |
| 3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)  Electronics simulators software |

G Course Evaluation and Improvement Processes

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| 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching  - Daily and quarterly exams. - Questionnaires distributed to students that related to the quality of the teaching process. - Evaluating the performance of students in the practical side.الاستماع |
| 2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department  - Follow-up program administration of the learning process during the semester. - Compare the results of students with a colleague in the department.  - Check the results by an external examiner. - Evaluation of the course section by the external auditor.  - Department head ask students about instructors. |
| 3 Processes for Improvement of Teaching  - The needs to conduct research for the teacher and follow-up by the administration. - The needs to attend educational workshops and for the development of teaching skills, quality and development Strategies.  - Consultation with the independent reviewer and external benchmarking.  - Benefit from the feedback of the opinions of students. |
| 4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)  Mechanism is through the Examinations Committee (internal examiner), where the evaluation samples of students answers and verification mechanism of the results and compare it to the rest of colleagues in the department. It is also evaluating the results by the external examiner and then the results are discussed in the department council and make necessary recommendations.الاستماع |
| 5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.  - Development of the current plan to be permanently up to date with development in the area of this course and by comparison with some reference world's most prestigious colleges. -Attention to the results of student assessment for the teacher each semester and to develop appropriate solutions. |

Name of Instructor: DR.Mohammed Al-Maitah

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Report Completed: 20.08.2017

Name of Field Experience Teaching Staff \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Program Coordinator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Received: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_