**COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification. |

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| Collage of Engineering  University of Baghdad | 1. Teaching Institution |
| Chemical Engineering | 2. University Department/Centre |
| Computer Programming (Matlab)/ CH.222 | 3. Course title/code |
| Chemical Engineering | 4. Programme(s) to which it contributes |
| Annual System ; There is only one  mode of delivery, which is a “Day  Program”. The students are full time  students, and on campus. They attend  full day program in face-to-face  mode. The academic year is  composed of 30-week regular  subjects. | 5. Modes of Attendance offered |
| 1st & 2nd / Academic Year 2017 – 2018 | 6. Semester/Year |
| 60 hrs. / 2 hrs per week | 7. Number of hours tuition (total) |
| 2018 | 8. Date of production/revision of this specification |
| 9. Aims of the Course | |
| * For the 1st academic course (visual basic);   This course focus on Visual Basic Language, how to use a familiar Graphic User Interface (GUI) and Design a windows application and working with control and writing the code and passing the data between procedures by using function and subroutine and finally chemical engineering application to find the solution .   * For the 2nd academic course (Matlab) ;   MATLAB (from MATrix LABoratory) is a high performance language for technical computing, which integrates computation, visualization, and programming in an easy to use environment, where problems and solutions are expressed in familiar mathematical notation. Provide a background to higher level courses involving matlab program . | |

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| 10· Learning Outcomes, Teaching ,Learning and Assessment Methode |
| Knowledge and Understanding  A1. To build the user interface (UI) ,which will consist of a combination of windows, menus, buttons etc .  A2 .To drawing the UI using the mouse much like a DTP program draws a page.  A3. To customize the properties of the interface .  A4. To attach program code to make the interface work in the way they desire.  A5. To develop their thinking methods and find solution.  A6 . The basic data element in MATLAB is the array (a collection of numbers arranged in a specific order). This allows them to solve many technical computing problems in a fraction of the time it would take to write a program in other languages. |
| B. Subject-specific skills  B1. They must be know the basic of using computer .  B2.they must have knowledge about computer programming .  B3. They must have Knowledge about software and hardware. |
| Teaching and Learning Methods |
| 1. Lectures.  2. Tutorials.  3. Homework and Assignments.  4. Lab. computer.  5. Tests and Exams.  6. In-Class Questions and Discussions.  7. Program application from net work to understand what did the visual basic do. |
| Assessment methods |
| 1. Examinations, Tests, and Quizzes.  2. Extracurricular Activities.  3. Student Engagement during Lectures.  4. Responses Obtained from Students, Questionnaire about  Curriculum and Faculty Member ( Instructor ). |
| C. Thinking Skills  C1. They will be able to solve that difficult problems which will be force them in different science fields, scientific or management fields.  C2. It will help them to crease their speed and ability to storage and recall and treat the data information by using this kind of programming language.  C3. Enable them to solve the chemical engineering problem. |

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| D. General and Transferable Skills (other skills relevant to employability and personal development)  D1. It will enable them to make a computer program in any field .  D2. they can develop themselves in any computer language .  D3. It will Provide them a background to higher level courses involving matlab program and visual Basic . |

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| 11. Course Structure | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Introduction to the Matalab Language and environment | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 1 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Building Applications | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab . | 2 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Working with Controls | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 3 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Writing the code | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 4 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Managing Data | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 5 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Working with variables | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 6 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Controlling Program Flow | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 7 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Select Case……End Select control Structure | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 8 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Looping | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 9 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Introduction to Matlab Built-in Functions | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 10 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Mathematical Functions | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 11 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Arrays(fixed and dynamic) | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 12 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Arrays(fixed and dynamic) | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 13 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Additional Matlab Controls (Check box, option button ) | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 14 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Additional applications | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 15 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Passing Data between procedures using function and subroutine | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 16 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Creating a Menu Bar | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 17 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Mastering strings | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 18 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Multi forms | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab . | 19 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Matlab desktop | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 20 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Matlab common mathematical functions | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 21 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Arrays in Matlab | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 22 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Matlab special functions for arrays | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 23 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Arrays transpose operation | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 24 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Arrays element by element operations | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 25 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | XY plotting in matlab | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab . | 26 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Obtaining the coordinates of a point | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 27 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Matrix operations, solving  Linear algebraic equation | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab . | 28 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Interpolation | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab | 29 |
| 1-4 of article Assessment method | 1-7 of article Teaching and Learning Methods | Integration | A1,A2,A3,A4,C2 and C3 | 2  1 the.  1 Lab. | 30 |

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| 12. Infrastructure | |
| 1-Microsoft visual Basic 6.0 step by step ,Michael Halvorson,1999  2-Programming Microsoft visual Basic 6.0 , Francesco Balena, 1999  3- Visual Basic in 12 Easy Lessons , Gray Perry , 2005  4-Problem Solving in Chemical and Biochemical Engineering With Polymath,Excel and Matlab ,Michael B.Cutlip and Mordechai Shacham , 2007  5-Engineering and Scientific Computations Using MATLAB, Sergey E. Lyshevski ,2003.  ***Others***  1.Notebook prepared by the instructor of the course.  2. Collection of sheets of solved and unsolved problems and Exams questions. | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
|  Computer Laboratory of the department.   Available websites related to the subject.   Extracurricular activities. | Special requirements (include for example workshops, periodicals, IT software, websites) |
| Extra lectures by foreign guest lecturers. | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
| CH.142 , CH.144 , CH.244, CH.242, CH.214 | Pre-requisites |
| / | Minimum number of students |
| 70 | Maximum number of students |