**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

 **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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|  Engineering College | ***1. Teaching Institution*** |
| University of Baghdad/ Department of Surveying  | ***2. University Department/Centre*** |
| Photogrammetry & Laser Scanning (PLS) | ***3. Course title/code & Description*** |
| BSc in Surveying Eng. (4th Stage) | ***4. Programme(s) to which it Contributes*** |
| Annual | ***5. Modes of Attendance offered*** |
| 2017-2018 | ***6. Semester/Year*** |
| 150 | ***7. Number of hours tuition (total)*** |
|  | ***8. Date of production/revision of this specification***  |
| ***9. Aims of the Course*** |
| The course aims to introduce the close-range geometry of photogrammetry as a core subject in Surveying Engineering in addition to laser scanning technology as a new felid integrated to photogrammetry.  |

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| ***10·*** ***Learning Outcomes***  |
| The student should deliver a complete knowledge and practical experience of applying close-range photogrammetric solution to solve Surveying problems and have a principal knowledge about laser scanning techniques. |
|  ***11.*** ***Teaching and Learning Methods*** |
| This includes, lectures, tutorials, reports, and technical practical’s |
|  ***12. Assessment Methods*** Exams and reports |
| ***13. Grading Policy*** Annual grades from exams, reports, etc. + grade from the final exam |

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| ***14. Course Structure*** |
|  |  |  |  |  | Week |
|  |  | **OVERVIEW: Photo and laser scanning**  |  |  | 1 |
|  |  | **TERRESTRIAL & CLOSE RANGE PHOTOGRAMMETRY** |  |  | 5 |
|  |  | **CAMERA CALIBRATION: Terrestrial** |  |  | 3 |
|  |  | **PHOTOGRAMMETRIC PRODUCTS: DTM** |  |  | 3 |
|  |  | **COORDINATE TRANSFORMATIONS** |  |  | 3 |
|  |  | **Introduction & physical principles (Acronyms, history, physical principals, basic componants, laser wavelength, lidar equation** |  |  | 5 |
|  |  | **laser scanning parameters, scanning mechanism, scan patterns, laser ranging)** |  |  | 3 |
|  |  | **ALS systems (Discrete-return, Full-waveform)** |  |  | 3 |
|  |  | **FWF-ALS data calibration and georeferencing (data quality, ALS data calibration** |  |  | 2 |
|  |  | **strip adjustment, radiometric calibration, radar eq.** |  |  | 2 |
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| ***15. Infrastructure*** |
| Elements of PhotogrammetryTopographic aerial laser scanning | Required reading:· CORE TEXTS· COURSE MATERIALS· OTHER |
| Programming in MatlabQT modeler software | Special requirements (include for example workshops, periodicals, IT software, websites) |
| NA | Community-based facilities(include for example, guestLectures , internship , field studies) |
| ***16. Admissions*** |
|  | Pre-requisites |
| 10 | Minimum number of students |
| 40 | Maximum number of students |
| Dr. Fanar M. Abed | ***17. Course Instructors*** |

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