# Course Description

**College/Institute: Maritime Postgraduate studies Institute**
**Program: Master in Hydrographic Surveying**

| **1- Course Data** | | |
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| **Course Code: MT 712** | **Course Title: Plane Surveying** | **Academic Year/Level: (2015/2016)/ Master** |
| **Specialization: Hydrographic Surveying** | **No. of Instructional Units** | **3 credit hours/week** |

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| **2- Course Aim** | The aim of this course is to introduce the main concepts of plane surveying as well as measurements and instruments. Also to develop the student's sense and capabilities in performing plane surveying measurement techniques and instruments to establish horizontal and vertical control with the necessary adjustment. | |
| **3- Intended Learning Outcome:** | | |
| **a- Knowledge and Understanding, students will be able to:** | - To Classify and understand different types of survey.<br>- To Discuss plane surveying instruments such as: tapes, EDM, levels, theodolite, and total station.<br>- To choose appropriate equipment for specific survey measurements.<br>- To discuss, understand and adjust: Traverse, Triangulation, and Trilateration. | |
| **b- Intellectual Skills, students will be able to:** | - Analyze EDM, Leveling, traverse errors.<br>- Interpret the disclosure and balancing in measurements.<br>- Evaluate methods of calculating areas and volume of dredging/ filling. | |
| **c- Professional Skills, students will be able to:** | - Use the knowledge of surveying fundamentals to solve problems.<br>- Search most advanced survey equipment and their specifications.<br>- Use differential levelling and angles tables and adjust them. | |
| **d- General Skills, students will be able to:** | - Practice using different equipment in measuring plane surveying.<br>- Develop practice using software for computing contour maps, grid leveling.<br>- Construct different types of map scale. | |
| **4- Course Content** | **Week No.**1 | - **Introduction to Plane Surveying:** Types of survey, Surveying Fundamentals, Field and office work. |
| | **Week No.**2 | - **'Scale'** types. Errors, Surveying instruments |
| | **Week No.**3 | - **Distances:** Tape, Electronic Distance |

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| | | Measurements (EDM), EDM Theory, errors, atmospheric effect, slope reduction. |
| | **Week No.**4 | - **Leveling:** definitions, differential leveling and field methods, |
| | **Week No.**5 | - **Leveling:** Leveling errors, Laser leveling |
| | **Week No.**6 | - **Topographic maps and earth work:** map contouring, Calculations of areas of cross sections, and compute volumes of filling or cut (dredging) works. |
| | **Week No.**7 | - Evaluation (1) |
| | **Week No.**8 | - **Angle measurements**: Theodolites, Total station Instruments. |
| | **Week No.**9 | - Measuring horizontal and vertical angles, mean angle error |
| | **Week No.**10 | - **Directions:** Whole Circle Bearing (WBC), Quadrant (reduced) Bearings; computation, |
| | **Week No.**11 | - **Directions:** declination computations, Adjustment. |
| | **Week No.**12 | - **Evaluation (2)** |
| | **Week No.**13 | - **Traverse surveys:** Types, angle and side disclosure and balancing, |
| | **Week No.**14 | - Triangulation and trilateration. |
| | **Week No.**15 | - **Surveying error and adjustment**, random errors, standard error. |
| | **Week No.**16 | - **Final exam** |
| **5- Teaching and Learning Methods** | - Lectures prepared on PPTX presented with data show, white boards<br>- Training on computers and use packages to draw contour maps, compute volumes.<br>- Assignment during the tutorial time in class and homework.<br>- Learn office work procedures. | |
| **6- Teaching and Learning Methods for Students with Special Needs** | - Additional office hours if required.<br>- Tailor the situation by adjusting the teaching and learning according to the most appropriate. | |
| **7- Student** | | |

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| **Assessment:** | |
| **a- Procedures used:** | 7th week exam, activities and assignments, 12th week exam, then final report for the project, presentation, participation along the course, final exam. |
| **b- Schedule:** | Assessment (1) 7th week, Assessment (2) in 12th week, in class and homework assignments. Final exam in the 16th week. |
| **c- Weighing of Assessment:** | 7th Week Examination (30%) , 12th Week Examination (20%), Practical & Semester Work (10%), Total 100% |
| **8- List of References:** | |
| **a- Course Notes** | - **Abdelrahman, Saad Mesbah (2010).** Fundamentals of Plane Surveying. Class Notes. |
| **b- Required Books (Textbooks)** | - **Ghilani, E. and P. Wolf (2012).** *An Introduction to Geomatics,* 13th ed, Pearson, BBS.<br>- **Irvine, William and F. Maclennan (2010).** Surveying for Construction, 5th edition. McGraw-Hill, Inc. PP 342.<br>- **McCormac, J. (1999).** *Surveying*. 4th edition, Prentice-hall, Inc. |
| **c- Recommended Books** | - **Benton, A. R. and Ph. J. Taez (1991).** *Elements of plane surveying*. McGraw-Hill, Inc., pp 429.<br>- **Harbin, Andrew L. (2001).** Land Surveyor Reference Manual. 3rd edition, Professional Publications, Inc.<br>- **Oregon Department of Transportation (2000).** Basic Surveying – Theory and Practice. |
| **d- Periodicals, Web Sites, ..., etc.** | - **http://www.iamcivilengineer.com/2014/10/download-fundamentals-of-surveying-by.html**<br>- https://www.iho.int/mtg_docs/IHReview/2011/IHR_May192011.pdf<br>- www.**hydro**-international.com/ |

**Vice Dean for Educational Affairs** | **Dean of College/Institute**

**Name & Signature:** | **Name & Signature:**

**Date:** | **Date:**