

# FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam

Presented by the FIG Working Week 2019,  
April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life  
and Environmental Resilience"



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## THE ESTABLISHMENT OF HYDROGRAPHY AND MARINE TECHNOLOGY PROGRAMME (UTM HYDRO III) FOR MALAYSIAN PROFESSIONAL LAND SURVEYORS

DEPARTMENT OF SURVEY AND MAPPING MALAYSIA (DSMM)  
UNIVERSITI TEKNOLOGI MALAYSIA (UTM)  
NATIONAL HYDROGRAPHIC CENTRE (NHC)  
LAND SURVEYORS BOARD MALAYSIA (LJT)

24 April 2019

Mohd Hilmi Abdullah, Mohd Noor Isa, Hanafiah Hassan, Najhan Md Said,  
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Md Rodi Ismail, Mohd Nazam Sulaiman

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## CONTENT

1. INTRODUCTION
2. AIMS OF THE PROGRAMME
3. AGENCIES
4. DEVELOPMENT OF UTM HYDRO III
5. CHALLENGING PHASE IN UTM HYDRO III
6. PROGRAMME STRUCTURE
7. HYDROGRAPHIC FIELD SURVEY PROJECT
8. 1<sup>ST</sup> UTM HYDRO III
9. BENEFITS OF UTM HYDRO III
10. CONCLUSION

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## INTRODUCTION

- Practice of **Malaysian Professional Land Surveyors** are often involved in a range of surveying activities such as
  - Cadastral surveys
  - Geodetic surveys
  - Topographical surveys
  - Engineering surveys
  - Photogrammetry
  - Hydrographic surveys

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## INTRODUCTION



Ports and Shipping

Safety  
Resilience

1 Ratio area of M  
and Land

6,036.7	km Co
569,845	km <sup>2</sup> V
329,758	km <sup>2</sup> L
883	Total

Geographic Location and Geopolitical Scenario



6 Maritime Tourisms and Fishing Activities

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## INTRODUCTION

In 2030,  
**AT LEAST 250** Malaysia  
Licensed Land  
Surveyors/Registered Land  
Surveyors will have a  
**CATEGORY A** Competency

**DSMM**  
37

Department of Survey and Mapping  
Malaysia (DSMM)  
37 Registered Land Surveyors

**PEJUTA**  
459

The Association of Authorised Land  
Surveyors Malaysia (PEJUTA)  
459 Licensed Land Surveyors

**SAJUTA**  
32

Sabah  
Surveyors  
Board  
(SAJUTA)  
32 Licensed  
Land  
Surveyors

**ACLS**  
58

Land Surveyors Board Sarawak  
(LSBS)  
51 Licensed Land Surveyors  
7 Registered Land Surveyors

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6





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## Cont....

- The **demand for hydrographic surveys** are increasing due to the rapid development of **ports and coastal engineering, offshore oil and natural gas exploitation**.
- These are **high economic value industries** but it is also **high risk industries** that require **regular monitoring** in order to avoid the potential of adverse environmental impact.
- The varied and dynamic nature of this coastal and offshore area dictates the frequency of hydrographic survey operations. Thus, it is essential to ensure **hydrographic survey are conducted accordingly to the standards by competent personnel**.

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## Cont...

### Establishment of Hydrography and Marine Technology Programme (UTM HYDRO III)

- an effort to train and expose Malaysian land surveyors towards the international standards, development and market demands in hydrographic surveys
- Designed for Malaysian Professional Land Surveyors

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## Current Developments

To train Malaysian Land Surveyors professionally in line with the current developments

## Train

To train and expose hydrographic surveyors towards the development and market demand within the mapping and marine industry

## Participate

To participate Malaysian Land Surveyors in international programme

## Recognised

To ascertain Malaysian Land Surveyors expertise is recognised either on a national or international level

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## DEVELOPMENT OF UTM HYDRO III

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The idea to establish the Hydrography and Marine Technology Programme (UTM HYDRO III) was made by the Director General of the Department of Survey and Mapping Malaysia (DSMM),

**YBHG. DATO' INDERA SR MOHD NOOR BIN ISA**

in July 2017.



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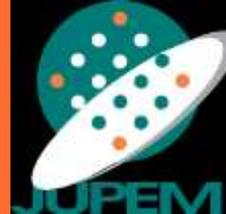
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## AGENCIES



- UTM HYDRO III is conducted by UTM under the Faculty of Built Environment and Surveying
- Only academic institution in Malaysia that has been recognised by FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyor and Nautical Cartographers (IBSC) to conduct Professional Hydrographic Programme since 1995



- DSMM is a government agency in Malaysia with the responsibility of providing mapping, cadastre and geodesy products and services.



- NHC is an organisation under the Royal Malaysian Navy and is responsible towards hydrographic activities such as hydrographic data collection in producing nautical chart for safety of navigation.



LJT is the corporate body and responsible for controlling and maintaining standards for Licensed Land Surveyors and other related matter; and regulating the practice of land surveying in Peninsular Malaysia.



- PEJUTA is responsible to raise the level of technical, professional, and management expertise among members of the association by promoting continual professional development, upgrading and updating of skills, knowledge and instrumentations.

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## PURPOSE UTM HYDRO III PROGRAMME

- to give a continuing professional development for Malaysian Professional Land Surveyors with comprehensive and broad-based knowledge in all aspects of the theory, current technologies and practice of hydrographic surveying, and allied with discipline.
- to keep and expose the Malaysian Professional Land Surveyors with the new standards in hydrographic activities.

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## UTM HYDRO III MANAGEMENT COMMITTEE

- Initiated by the Director General of DSMM, comprising of DSMM, NHC, LJT, UTM and PEJUTA.
- **Aim of this committee** is to establish and manage a international hydrographic programme for Malaysian Professional Land Surveyors.
- A series of meeting and discussion took place to design the syllabus of UTM HYDRO III that comply with the new standard known as FIG/IHO/ICA Standards of Competence for Category 'A' (Publication S-5A, First Edition, Version 1.0.1– June 2017).

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**JAN 2017 : THE IDEA AND NEED NEW HYDROGRAPHIC PROGRAMME FOR PROFESSIONAL LAND SURVEYORS**

**APRIL 2017 : ESTABLISHMENT UTM HYDRO III COMMITTEE (1<sup>ST</sup> MEETING)**

**JUNE 2017 DESIGNED UTM HYDRO III PROGRAMME (2<sup>ND</sup> MEETING)**

**SEPT 2017 AMENDMENT TO DESIGNED UTM HYDRO III PROGRAMME (SYLLABUS AND SUBJECTS ) AND LECTURER SELECTION) (3<sup>RD</sup> MEETING)**

**NOV 2017 FINALISED DRAFT UTM HYDRO III PROGRAMME (4<sup>TH</sup> MEETING)**

**DEC 2017 SUBMITTED DRAFT UTM HYDRO III TO IBSC**

**APRIL 2017 PRESENTATION UTM HYDRO III PROGRAMME AT 41<sup>TH</sup> IBSC MEETING IN INSTITUTE TECHNOLOGY BANDUNG, INDONESIA**

**JUN 2018 SUBMITTED CORRECTION TO IBSC**

**MAC 2018 RECOGNITION LETTER AND CERTIFICATE CATEGORY 'A' UTM HYDRO III (14 NOV 2018)**

**MAY 2018 MoU UTM, DSSM, NHC, LJT, PEJUTA**

**SEPT 2018 UTM HYDRO III COMMITTEE (1<sup>ST</sup> INTAKE) (6<sup>TH</sup> MEETING)**

**OCT 2018 1<sup>ST</sup> UTM HYDRO III PROGRAMME OFFERED AT UTM KUALA LUMPUR**

**CHRONOLOGY ON  
UTM HYDRO III  
SUBMISSION**

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Sr Mohd Noor Isa and Malaysian delegates with Mr. Adam Greenland, Chairman of IBSC after presentation UTM HYDRO III Programme



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N°185

*FIG/IHO/ICA International Board on  
Standards of Competence for Hydrographic Surveyors  
and Nautical Cartographers (IBSC)*



## CERTIFICATE OF RECOGNITION

*The FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, having reviewed the programme "**Hydrography and Marine Technology Programme (UTM Hydro III)**" submitted by the **UNIVERSITI TEKNOLOGI MALAYSIA-UTM (MALAYSIA)** against the Standards of Competence for Category "**A**" Hydrographic Surveyors, S-5 A Edition 1.0.1, and being satisfied that it meets the requirements prescribed in the Standards, hereby awards this certificate of recognition for a period of six (6) years.*

*Signed at Monaco*

*Adam Greenland  
Chairman of the Board*

*This day the 31 of March 2018*

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## PROGRAMME STRUCTURE

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## PROGRAMME STRUCTURE

- (UTM HYDRO III) has been designed to be flexible with the programme being delivered in **42 weeks (6-8 hours/day)** by modular approach.
- The programme is designed with **seven (7) modules** and it offers the adaptable and flexible mode to complete this programme in two years
- The programme contains a series of modules and formal training sessions as well as additional **practices, tutorials** and **field experience**.
- The total class duration is **1,330 hours** and it has been divided according to the structured subjects in this programme.

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## UTM HYDRO III MODULES

MODULE 1	FOUNDATION OF HYDROGRAPHY AND MARINE TECHNOLOGY	194 HOURS
MODULE 2	MARINE DATA ACQUISITION I	180 HOURS
MODULE 3	MARINE DATA ACQUISITION II	276 HOURS
MODULE 4	GEOSPATIAL DATA AND LEGAL ASPECT	150 HOURS
MODULE 5	INDUSTRIAL TECHNOLOGY FOR HYDROGRAPHIC DEVELOPMENT I	90 HOURS
MODULE 6	INDUSTRIAL TECHNOLOGY FOR HYDROGRAPHIC DEVELOPMENT II	130 HOURS
MODULE 7	HYDROGRAPHIC FIELD SURVEY PROJECT	320 HOURS

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## DETAILS OF PROGRAMME STRUCTURE

**DURATION : 42 WEEKS ( 1,330 HOURS )**

- a. Theory (513 hours)
- b. Tutorials (169 hours)
- c. Practical (66 hours)
- d. Self-Guided (177 hours)
- e. Assignment (79 hours)
- f. Examinations (46 hours)
- g. Hydrographic Field Survey Project (280 hours)

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## SUBJECTS

### Module 1 :

Foundations of Marine Technology

- Mathematics and Statistic
- Computer Programming
- Physics

### Module 2 :

Marine Data Acquisition I

- Geodesy
- Tides, Theory and Practice

### Module 3 :

Marine Data Acquisition II

- Hydrographic Positioning
- Hydrographic Surveys

**Module 4 :** Geospatial Data Development and Legal Aspect

- Hydrographic Information
- Law of the Sea

**Module 5 :** Industrial Technology for Hydrographic Development I

- Seamanship and Navigation
- Marine Meteorology

**Module 6 :** Industrial Technology for Hydrographic Development II

- Dynamic Oceanography and Sedimentology
- Remote Sensing

### Module 7:

- Hydrographic Field Survey Project

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## HYDROGRAPHIC FIELD SURVEY PROJECT

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## HYDROGRAPHIC FIELD SURVEY PROJECT

### Aim of Hydrographic Field Survey Project

is to expose the students with experience by combining the material covered in the previous modules and to supply the hands-on experience with field equipment which is not available in the classroom.

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## HYDROGRAPHIC FIELD SURVEY PROJECT

- In this field project, a comprehensive **survey operation** starting from **survey planning** which includes **collecting data** from the existing records, **establishing survey control**, and **hydrographic data acquisition**, up to the **completion of the field sheet in the form suitable** to be submitted to the field sheet checking unit.
- Apart from manual entry, the students will also be **exposed to the use of hydrographic softwares** i.e. real-time data acquisition system and post-processing software. All these are covered in chronological order and each Malaysian Professional Land Surveyors works on every aspect of the survey. The Hydrographic Field Survey Project will be conducted with multibeam survey and other related hydrographic sensors.

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## HYDROGRAPHIC FIELD SURVEY PROJECT

- The Hydrographic Field Survey Project will be conducted with **multibeam survey** and **other related hydrographic sensors**.
- Most of the system and vessel currently used for the practical Hydrographic Field Survey Project belongs to NHC.
- The vessel will be optimised for shallow water applications and equipped with multibeam echo sounder system and single beam echo sounder, a sub bottom profiler, side scan sonar, inertial navigation system, GNSS positioning and etc.

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## VESSEL (NHC)



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## CHALLENGING PHASE ON UTM HYDRO III PROGRAMME

- The challenging points during the Hydrography and Marine Technology Programme (UTM HYDRO III) are as shown below:
  - Comply with the new standard known as **FIG/IHO/ICA Standards of Competence for Category 'A', Publication S-5A, First Edition, Version 1.0.1–June 2017.**
  - **Implementation of theories and principles with current technologies** in Category 'A' syllabus.
  - Syllabus designed to comply with the **standard and parallel with experiences of Malaysian Professional Land Surveyors.**

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# 1<sup>st</sup> UTM HYDRO III PROGRAMME

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## 1<sup>ST</sup> UTM HYDRO III PROGRAMME

- Started : 5 October 2018
- Complete : 4 August 2019.
- The Opening Ceremony was officiated by the Director General of Department of Survey and Mapping Malaysia
- Attended by a total of 18 Malaysian Professional Land Surveyors
- The programme was delivered on modular approach at UTM Kuala Lumpur, Malaysia.

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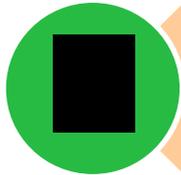
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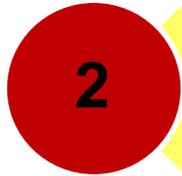
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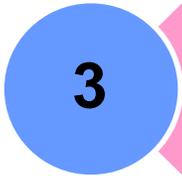
## BENEFITS OF THE PROGRAMME



Expose the Malaysian Professional Land Surveyors to theory, principle and standard of operation in conducting hydrographic survey activity in accordance with predetermined standards.



The Continues Professional Development (CPD) in hydrographic field will open the students to a broader field of career and professionalism.



This programme will produce a competent Malaysian Professional Land Surveyors that can be Malaysian Subject Matter Expert in hydrographic surveying.

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## CONCLUSION

- The UTM HYDRO III has made a significant contribution towards ensuring that the Malaysian Professional Land Surveyors is expose to the current hydrographic surveys technologies that follows the hydrography standards or standards of procedure especially on engineering, marine cadastre development and marine explorations in Malaysian Waters.
- The certification of UTM HYDRO III that meets a Category 'A' standard will provides additional confidence in the survey activities by the Malaysian Professional Land Surveyors

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**Secretary General IHO-Dr. Mathias Jonas**

**Sea define the land or land the sea?**

**Each drew new meaning through the waves collision. Sea broke on land to full identity.**

**Seamus Heney**

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# THANK YOU

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