

Annual Report to the IHO
In accordance with Paragraphs 3.4 and 3.5
Of the Memorandum of Understanding dated 1 August 2018

By
Maxim F. van Norden
25 October 2018

Maxim F. van Norden, C.H.
Director,
Hydrographic Science Degree Programs
School of Ocean Science and Engineering
The University of Southern Mississippi
1020 Balch Boulevard
Stennis Space Center, MS 39529-9904
tel: 228-688-7123; fax: 228-688-1121
email: maxim.vannorden@usm.edu

Annual Report for IHO - Korea Fund, Academic Year 2017 - 18

One student sponsored by the IHO-Korea Fund completed the University of Southern Mississippi Hydrographic Science Master Degree/Category A Program. This student also received a Master’s Degree in Hydrographic Science and the U.S. Navy Hydrographer of the Navy Award for being the outstanding students of the class. Tables I and II below display the general calendar and specific courses of the program. The student was:

Valentina Cornelia Pavel, LTJG, Romanian Navy, Maritime Hydrographic Directorate, Romania

The general calendar for Academic Year 2017 – 2018 is displayed below:

Table I. Hydrographic Science Program Calendar for AY 2017 - 18

| Hydrographic Science Program Calendar 2017 - 18 | |
|--|----------------|
| Event | Date |
| Students arrive in Mississippi | 4-Aug-17 |
| MATLAB review | 7 - 10 Aug |
| Orientations | 11, 14 &15 Aug |
| Fall Semester classes begin | 16 - Aug |
| Fall Semester exams | 4 - 7 Dec 17 |
| Christmas Break | 8 Dec - 15 Jan |
| Spring Semester classes begin | 16-Jan-18 |
| Spring Semester exams | 7 - 10 May |
| Summer session classes | 14 - 25 May |
| Survey Project field begins | 28-May |
| Survey Project field ends | 6-Jul |
| Nautical Cartography | 9 – 20 July |
| Production of deliverables | 23 – 27 July |
| Comprehensive exam | 30-Jul |
| Graduation Recognition Ceremony | 2-Aug 18 |

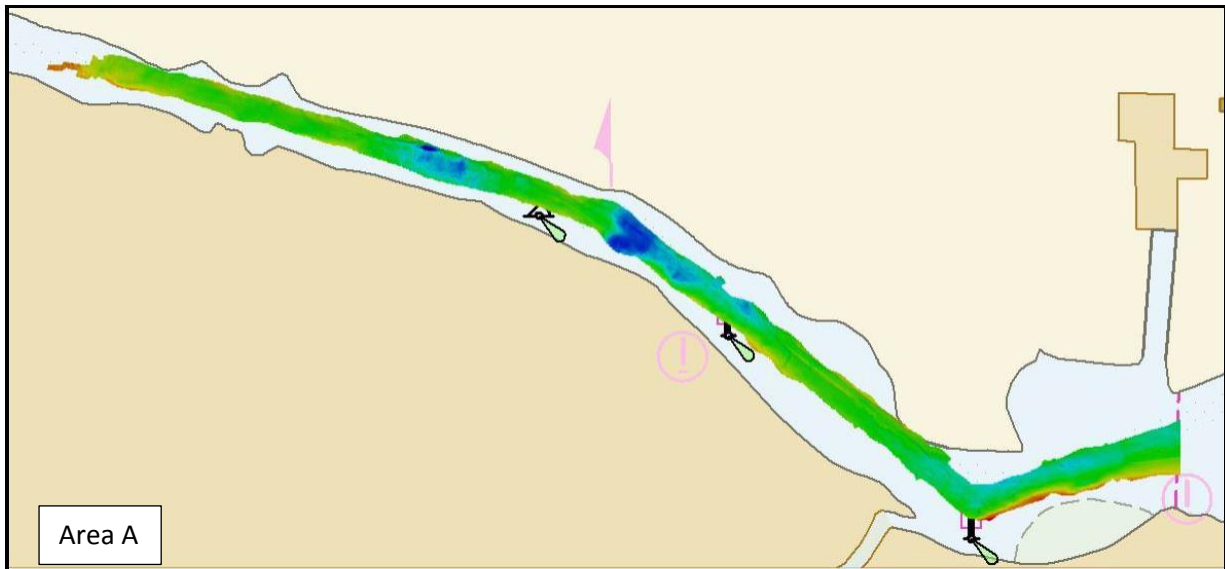
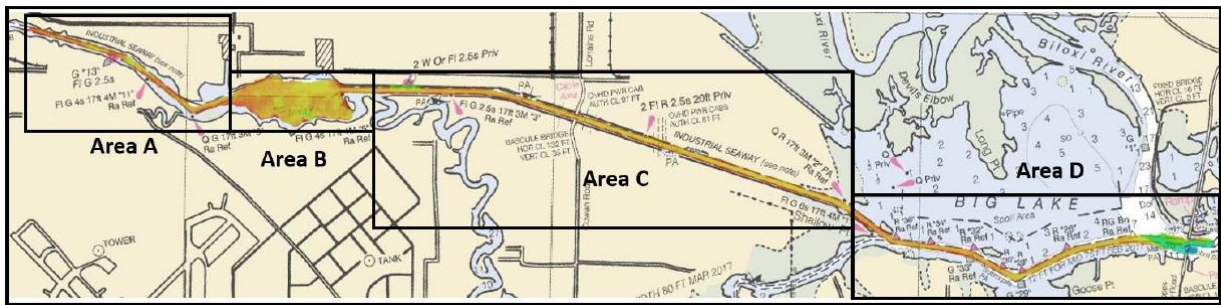
Table II. Hydrographic Science Master Degree Program for AY 2017 - 18

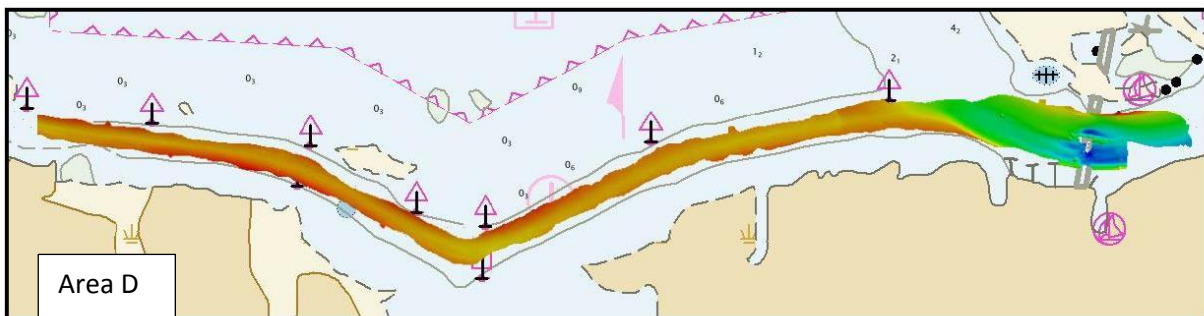
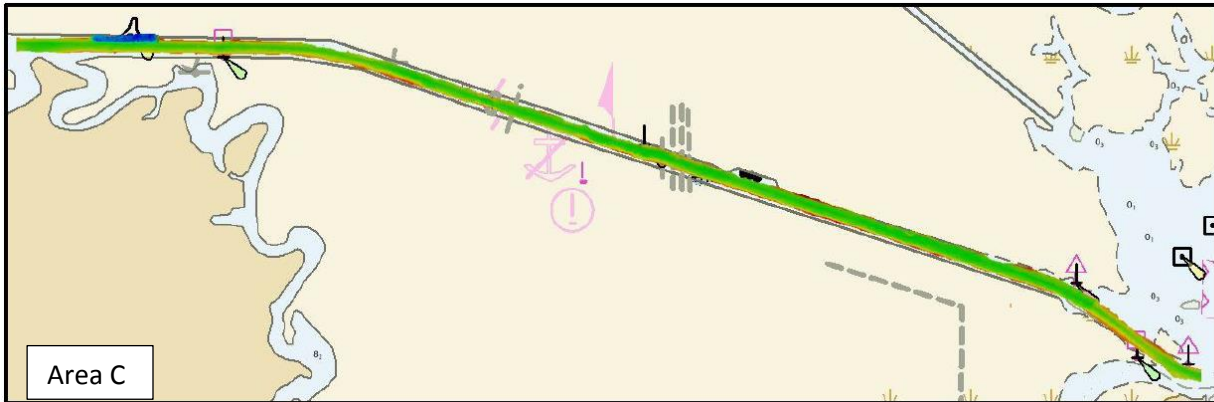
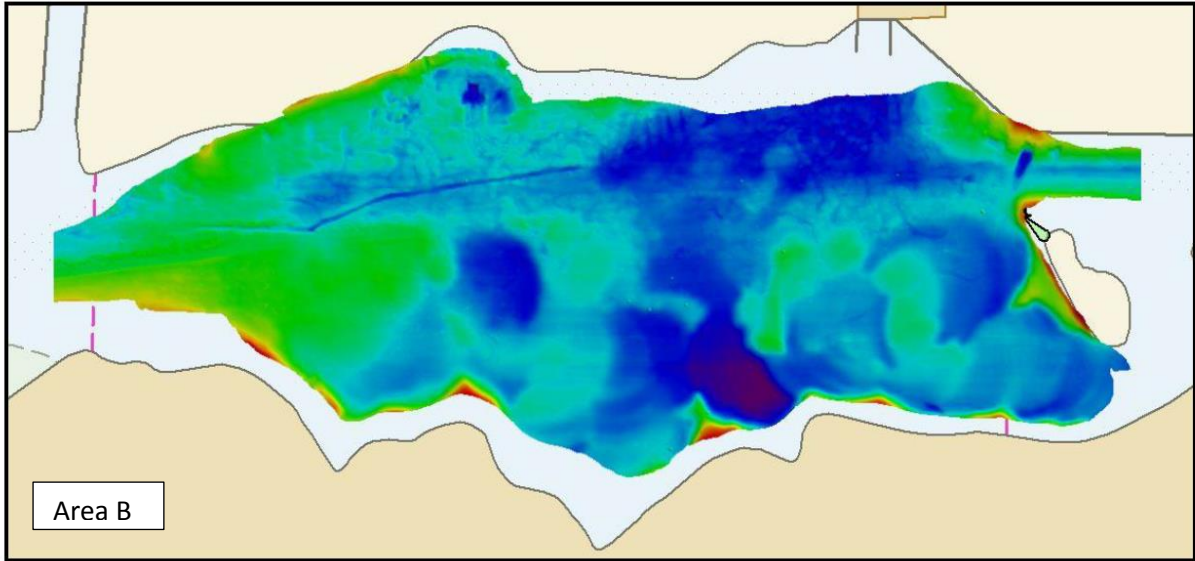
| Official Courses | Credit Hours | Subject | Instructor | Instructor Rank |
|---|---------------------|--|--------------------------|---------------------------------------|
| Fall (1st) Semester (15 credit hours, 16 weeks) | | | | |
| MAR 668 | 3 | Applied Ocean Acoustics | Dr. Wells | Contract Professor |
| HYD 600 | 3 | Classical Geodesy | Dr. Howden | Associate Professor |
| HYD 607 | 3 | Oceanography for Hydrographers | Dr. Briggs | Adjunct Professor |
| HYD 608 | 2 | Practical Hydrography | Mr. van Norden | Coordinator & Instructor |
| HYD 609 | 1 | Nautical Science | RDML (ret) Barbor | Director HSRC & Instructor |
| HYD 620 | 3 | Math Concepts for Hydrographers | Dr. Netchaev | Associate Professor |

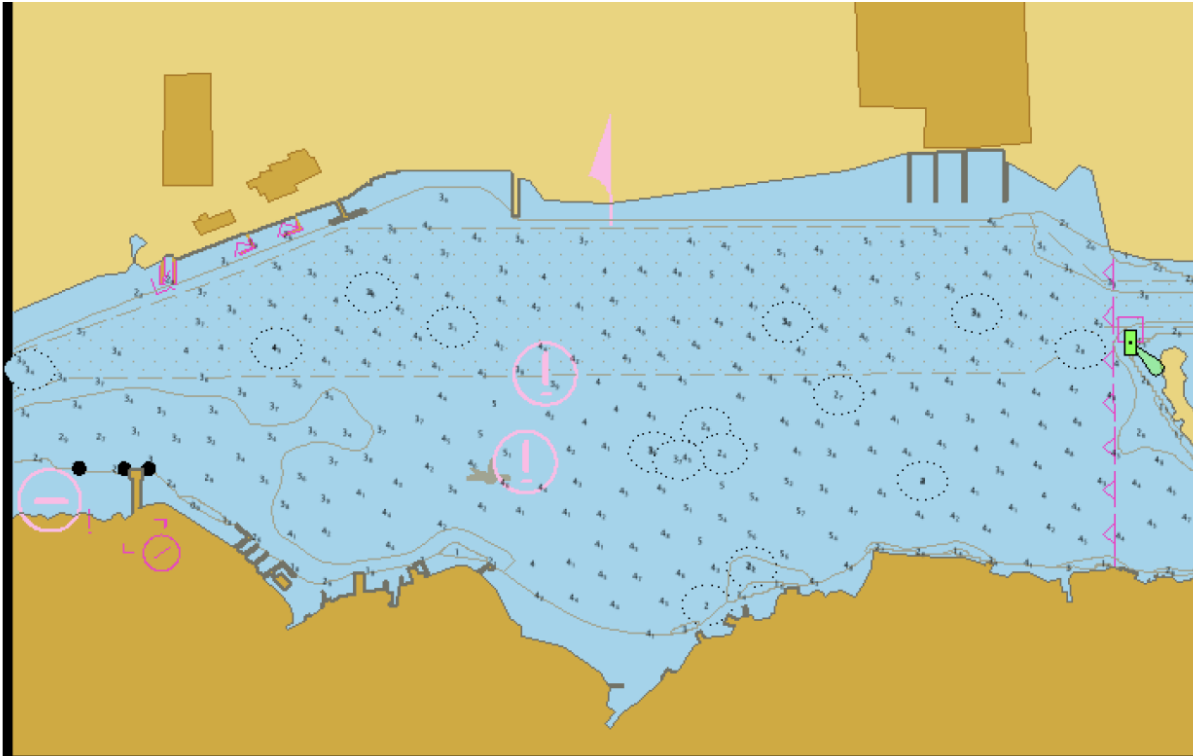
| | | | | |
|--|----------|---|-----------------------|-------------------------------------|
| Spring (2nd) Semester (15 credit hours, 16 weeks) | | | | |
| HYD 601 | 3 | Hydrographic Data Management | Dr. Hiroji | Assistant Professor |
| HYD 604 | 3 | Kinematic Positioning | Dr. Wells | Contract Professor |
| HYD 605 | 3 | Applied Bathymetry | Dr. Wells | Contract Professor |
| HYD 611 | 3 | Remote Sensing for Hydrographers | Mr. van Norden | Coordinator & Instructor |
| HYD 612 | 3 | Water Levels | Dr. Howden | Associate Professor |

| | | | | |
|--|----------|--|----------------------------|-------------------------------------|
| Summer (3rd) Term (6 credit hours, 11 weeks) | | | | |
| HYD 606 | 2 | Nautical Cartography and GIS | CARIS/Mr van Norden | Online Instruction |
| HYD 603 | 1 | Law and Policy for Hydrographic Science | Mr. van Norden | Coordinator & Instructor |
| HYD 610 | 3 | Hydrographic Science Field Project | Mr. van Norden | Coordinator & Instructor |

The International Board specifies in IHO S-5A that all students must complete a comprehensive field project. After completing detailed hydrographic survey specifications for their project, Class AY 2017 – 18 began their field program on 28 May. The field program covered about seven weeks for equipment installations, calibrations, software setups, data collection and processing, and production of deliverables. All deliverables were submitted on 26 July and defended before a panel of experts on 30 July. Ms. Pavel was on a 4-person team that surveyed The Gulfport Lake and Industrial Seaway, Mississippi. This is an inland waterway used by industrial supply boats and recreational boaters. This survey was done as an Ellipsoid Referenced Survey using NOAA Object Detection Coverage and IHO Order 1A standards for hydrographic surveys. The student team established two tide stations to determine ellipsoid-chart datum separation. The team used a Kongsberg 2040C multibeam sonar with slanted transducer and an EdgeTech 4125 side-scan sonar for bathymetry and target identification. They also made use of terrestrial lidar, Google Earth imagery, and a Topcon GR-5 GNSS to conduct a shoreline survey. The project was successfully completed and two uncharted wrecks were reported to NOAA. The team completed all reports required by NOAA and USM. Examples of bathymetric coverage on NOAA Chart 11372 are shown below.







Student team produced ENC cell of Gulfport Lake with updated shoreline, bathymetry and NAVAIDs.

Disbursement of IHO-Korea funds

Table III lists the planned disbursement for Academic Year 2017 – 18 for the IHO student. Payouts were done at the beginning of each semester of which only the funds for textbooks and stipends were sent directly to each student bank account for use at their discretion. Funds for vehicle charges and travel were retained in accounts setup to support student use of university vehicles and conference travel. Ms. Pavel attended the HYPACK Conference in Savannah GA in January 2018.

Table III. Academic Year 2017 – 18 Planned Disbursements of IHO-Korea Fund

| AY 2017 - 2018 | Fall Costs | Spring Costs | Summer Costs | Total/Student |
|----------------------------------|--------------|--------------|--------------|---------------|
| Tuition | 4801 | 4801 | 2622 | 12224 |
| Course fees | 750 | 1500 | 800 | 3050 |
| International & Graduation Fees | 205 | 205 | | 410 |
| Dept. of Marine Science transp. | 500 | 500 | 0 | 1000 |
| Travel/per diem for a conference | 0 | 1000 | 0 | 1000 |
| Textbooks & supplies (est.) | 650 | 650 | 0 | 1300 |
| Medical insurance & Clinic | 1020 | 1020 | 0 | 2040 |
| Living Stipend | 8500 | 8500 | 3400 | 20400 |
| Taxes | 1570 | 1660 | 0 | 3230 |
| Total/Student | 17996 | 19836 | 6822 | 44654 |

| FY18 | | | | | | | | | | | | FY19 | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|------------------|------------------|------------------|-----------|-----------|
| Aug-17 | Sep-17 | Oct-17 | Nov-17 | Dec-17 | Jan-18 | Feb-18 | Mar-18 | Apr-18 | May-18 | Jun-18 | New Funds 8/20/2018 | Jul-18 Actual | Aug-18 Actual | Sep-18 Actual | Balance | |
| Actual | Actual | Actual | Actual | Actual | Actual | Actual | Actual | Actual | Actual | Actual | | Actual | Actual | Actual | Actual | |
| 10,189.67 | 54,843.67 | 36,057.24 | 36,057.24 | 36,057.24 | 36,057.24 | 16,521.24 | 14,587.59 | 14,261.62 | 14,261.62 | 14,261.62 | 14,261.62 | 10,850.62 | 96,646.75 | 60,856.75 | 60,856.75 | 60,856.75 |
| 44,654.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | | | | |
| 0.00 | 18,786.43 | 0.00 | 0.00 | 0.00 | 19,536.00 | 1,933.65 | 325.97 | 0.00 | 0.00 | 0.00 | 0.00 | 3,463.87 | 35,790.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 1,290.43 | 0.00 | 0.00 | 0.00 | 1,200.00 | 1,933.65 | 325.97 | 0.00 | 0.00 | 0.00 | 0.00 | 52.87 | 0.00 | 0.00 | 0.00 | 9,586.75 |
| 0.00 | 17,496.00 | 0.00 | 0.00 | 0.00 | 18,336.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3,411.00 | 87,060.00 | 3,411.00 | 35,790.00 | 0.00 | 0.00 | 51,270.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | - |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,843.67 | 36,057.24 | 36,057.24 | 36,057.24 | 36,057.24 | 16,521.24 | 14,587.59 | 14,261.62 | 14,261.62 | 14,261.62 | 14,261.62 | 89,260.00 | 7,386.75 | 60,856.75 | 60,856.75 | 60,856.75 | 60,856.75 |

Table IV. Actual monthly disbursements of IHO-Korea Funds for Academic Year 2017 – 18.

Class 2015 - 2016

| | |
|---------------------------|-----------|
| Babtunde Luqman AKANDI | Nigeria |
| Jasim Yusuf BUTAIBA | Bahrain |
| Lucian DUTU | Romania |
| Devendra Ragoonath MADHOW | Mauritius |

Class 2016 - 2017

| | |
|--------------------------|-------------|
| Abdul Halim AHMAD NORDIN | Malaysia |
| Gilbert Avila AVIOLA | Philippines |

Class 2017 – 2018

| | |
|--------------------------|---------|
| Valentina Cornelia PAVEL | Romania |
|--------------------------|---------|

Class 2018 – 2019

| | |
|-------------------------------|-----------|
| Kirill ANJUTIN | Estonia |
| Mohd Massuoadi bin MOHD ZUKRI | Malaysia. |

Recognition Ceremony

SOUTHERN MISS GRADUATES THE 19th CLASS OF MASTER OF SCIENCE HYDROGRAPHIC SCIENCE STUDENTS WITH CATEGORY A CERTIFICATES

On Thursday, August 2, nine students were recognized at the Fleming Education Center, Gulf Park for completing all degree requirements for the Master of Science in Hydrographic Science program. These students also received the International Board Category A Certificate for competency in hydrographic surveying. The ceremony, presided by Mr. Maxim van Norden (Program Coordinator), included remarks by Dr. Karen Coats (Dean of the Graduate School), and by CAPT Ronald Shaw (Chief of Staff, Naval Meteorology and Oceanography Command) who gave the keynote address. Attendees to the ceremony included Dr. Rodney Bennett (President), Dr. Steven Moser (Provost), and about 60 family members and friends. LTJG Valentina Pavel, Romanian Navy received the Hydrographer of the Navy Award from CAPT Shaw for being the outstanding student of the class.



LtJg. Valentina Pavel receiving the Hydrographer of the Navy Award for being the outstanding student of the class from President Dr Rodney Bennett and Capt. Ronald Shaw, Chief of Staff, CNMOC



1st row, L-R, LT Shunika Johnson USN, Abigail Hode (Navy employee), Abednego Nkem (Nigeria), LTJG Valentina Cornelia Pavel (Romanian Navy), Andrew Hall (Navy employee), Lori Millonzi (Navy employee)

2nd row, L-R, Denis Karamagi (Uganda), LT Elliot Hoy USN, CDR Branislav Gloginja (Montenegro Navy).

*Hydrographic Science Program
at Southern Miss*

Beginning in 1999, The University of Southern Mississippi has offered a rigorous, one-year Master of Science degree in Hydrographic Science. The 2018 graduating class represents the 19th graduating class of a program that has matured into the foremost hydrographic science program in North America.

Designed in cooperation with the U.S. Navy to meet Category A requirements by the Federation Internationale des Géomètres, International Hydrographic Organization and International Cartographic Association (FIG/IHO/ICA) International Board of Standards and Competence for Hydrographic Surveyors and Nautical Cartographers, USM was the first educational institution in the United States to receive this certification. The Hydrographic Science master's program is a demanding and intensive curriculum covering all aspects of geodesy and hydrographic science. It is core to the advanced educational requirements of the U.S. Navy and is sought out by government agencies and industry, worldwide, to meet their need for highly trained hydrographers.

In 2013, the IHO selected Southern Miss to educate hydrographers from Developing Nations. With donations from the Republic of Korea to pay all costs, 15 international students have benefitted from this program.

Due to recognized industry and Blue Economy requirements, the geographic proximity to nearly 4000 offshore platforms, and the existing expertise with hydrographic academic programs, Southern Miss commenced a new 4-year undergraduate B.S. Marine Science degree program with a Hydrography emphasis at the Gulf Park campus in Fall 2015. This program received \$600,000 in startup funds from the Office of Naval Research. In June of this year, the International Board recognized the undergraduate program at the Category B level. This new curriculum, which is the only of its kind in the United States, will further enhance our national and international reputation for excellence in hydrographic science.



THE UNIVERSITY OF
**SOUTHERN
MISSISSIPPI.**

*Hydrographic Science
Class of 2018
Recognition Ceremony*

Thursday, August 2, 2018

2 p.m.

*Fleming Education Center Auditorium
Southern Miss Gulf Park*

Hydrographic Science Graduate Candidates

Branislav Gloginja, LCDR, Ministry of Defense of Montenegro, Head of Hydrography Department, Department of Hydrography and Oceanography, Montenegro – B.S. Maritime Affairs, Military Academy of the Army of Yugoslavia (Navy Section) Belgrade, 1998.

Andrew B. Hall, Physical Scientist, Hydrography Department, Naval Oceanographic Office – B.S. Mathematics, Millersville University of Pennsylvania, 2011.

Abigail McGraw Hode, Physical Scientist, U.S. Naval Research Laboratory – B.A. History, Agnes Scott College, 2008.

Elliot Hoy, LT, USN, Fleet Survey Team – B.S. Oceanography, U.S. Naval Academy, 2012.

Shunika S. Johnson, LT, USN, Fleet Survey Team – M.S. Statistics, West Virginia University, 2012; B.A. Mathematics, Washington & Jefferson College, 2010.

Denis Karamagi – B.Sc. Land Surveying, Makerere University, Kampala Uganda, January 2013.

Lori Lee Millonzi, Physical Scientist, Fleet Survey Team – B.S. Geology, Florida State University, 2000.

Abednego Udochukwu Nkem, Hydrographic surveyor – B.S. Geoinformatics and Surveying, University of Nigeria Nsukka 2013.

Valentina Cornelia Pavel, LTJG, Romanian Navy, Maritime Hydrographic Directorate, Romania – B.S. Navigation, Hydrography and Naval Equipment, Romanian Naval Academy, 2012.

The University of Southern Mississippi Hydrographic Science Class of 2018 Recognition Ceremony

WELCOME AND INTRODUCTIONS

Maxim F. van Norden, CH
Coordinator, Hydrographic Science Programs
The University of Southern Mississippi

REMARKS

Dr. Karen S. Coats, PhD
Dean of the Graduate School
The University of Southern Mississippi

KEYNOTE SPEAKER

Capt. Ronald R. Shaw Jr., U.S. Navy
Chief of Staff
Commander, Naval Meteorology and Oceanography Command

PRESENTATION OF HYDROGRAPHER OF THE NAVY EDUCATION AWARD

Capt. Ronald R. Shaw Jr., U.S. Navy

PRESENTATION OF CAT A CERTIFICATES

Dr. Rodney Bennett, President
The University of Southern Mississippi
Capt. Ronald R. Shaw Jr., U.S. Navy, Chief of Staff
Commander, Naval Meteorology and Oceanography Command
Mr. Maxim F. van Norden, CH, Coordinator, Hydrographic Science Programs

Reception and Cake Cutting
