Bangabandhu Sheikh Mujibur Rahman
Maritime University, Bangladesh

Prospectus

B.Sc (Hons) in Oceanography



Faculty of Earth & Ocean Sciences

Bangabandhu Sheikh Mujibur Rahman
Maritime University, Bangladesh

Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU), Bangladesh came out as the first ever maritime university of Bangladesh by an Act of the Parliament on 26 October 2013. The honourable President of the People's Republic of Bangladesh is the Chancellor of the University. Right after the inception, the university started its journey towards excellence. MoU with a few reputed Maritime Universities of the world has already been signed for necessary supports to maintain high standard in education system in this university. The university is also planning to include Oceanographic Research Vessel for training of students and research works by the scientists to explore our sea area. With the landmark verdict on delimitation of maritime boundary with India and Myanmar, Bangladesh has been endowed with a large sea area. As the resources on land are depleting, it has become imperative for the nation to look towards the sea for its survival. Effective exploration and exploitation of maritime resources is therefore paramount towards economic emancipation of the country in the 21st century. Besides, the onus of maintaining 'good order at sea' is becoming heavier with the passage of time. In order to attain these goals, the nation desperately needs right kind of human resources. BSMRMU with its motto 'We Strive for Maritime Excellence' would provide necessary human resources for the nation, through creation of effective well qualified and knowledgeable human resources in the coming days. Towards attaining its goals, the university is going to conduct both graduate and post-graduate courses on various maritime fields. Process to establish a permanent campus is going on, where other specialized fields of study will be opened. Thus, it will endeavour to emerge as a center of excellence in maritime higher education within the shortest possible time.

Vision

The vision of BSMRMU is to promote and create a learning environment for higher maritime education with excellence, through state-of-the-art facilities and gadgets, competent faculty and staff, expanded frontier of research based knowledge and international standards supportive of the new horizons in diverse fields by 2021.

Mission

The mission of BSMRMU is to provide quality education based on state-of-the-art technological support responsive to the emerging challenges at home and abroad. BSMRMU is dedicated to nurture and develop world class professionals, who would serve the mankind with strong sense of ethical values and competence and ready to face the competitive world of maritime business, service and employment.

Goals

- Achieve sustainable development and progress of the university through mutual cooperation with other related universities/ institutions.

- Continue to upgrade educational services and facilities responsive to the demands and requirements of the nation.
- Bring all types of marine professionals on a common platform to share knowledge and perform research and development work for the advancement of the country's maritime sector.
- Enhance research consciousness in the maritime sector in discovering new dimensions with the upcoming challenges.
- Accelerate the participation of alumni students and professionals with educational programs and development of projects designed to expand and improve academic standards.
- Teach students on marine science and technology and guide them towards research to enhance contribution to the maritime profession.
- Conduct various educational programs and research work for sustainable development of the maritime service and industrial sector of the country.
- Educate students on different subjects of maritime management, law and security and strategy and conduct research on allied fields.
- Create conducive environment for students to prepare themselves to serve the nation as future planners/ policy makers/ leaders in maritime sectors in coordination with national and international organizations including International Maritime Organization (IMO).

Name of the Faculties

1. Faculty of Maritime Governance & Policy
2. Faculty of Shipping Administration
3. Faculty of Earth & Ocean Sciences
4. Faculty of Engineering & Technology
5. Faculty of General Studies
6. Faculty of Business Studies

Affiliated Institute

1. Bangladesh Marine Academy, Chittagong

Message from Vice-Chancellor

It is a matter of great pride and joy that we have commenced the academic activities regarding Oceanography through launching of BSc in Oceanography. Our mission is to seek, teach and communicate scientific understanding of the oceans, atmosphere and other maritime domains for the benefit of our nation. Our aim is to understand and predict how the oceans specially the Bay of Bengal works, as well as working out how to make the most efficient and sustainable use of its resources. We expect to create an intellectual and social environment that will enhance the quality of graduate education at BSMRMU. The students will be the pioneer of graduates in Oceanography studies conducted at BSMRMU. Our students will learn about some of the important discoveries that oceanographers have made and some areas that are still unexplored. This is a humble beginning of our journey towards achieving excellence in the Oceanography domain. The program is designed to prepare the participants with the professional knowledge and expertise to manage the activities and operations of Oceanography towards reaping maximum benefit for the humanity in general and the nation in particular. We sincerely hope that our students will be able to come out successfully with the desired knowledge and expertise to serve the nation.

Message from the Dean
Faculty of Earth and Ocean Sciences

I am very happy to announce that BSc (Hons) in Oceanography has started its journey at Bangabandhu Sheikh Mujibur Rahman Maritime University. We all know that the ocean is a vast and challenging place to work, but knowledge about the ocean is very limited to us. In fact, the Bay of Bengal had remained relatively unexplored especially the Northern Bay. I hope that the Department of Oceanography at BSMRMU will improve our understanding of the seas focusing the Bay of Bengal and this knowledge will benefit our nation.

The Department of Oceanography at BSMRMU aims to advance our knowledge of all facets of the ocean environment around Bangladesh. The goal of the department is to advance marine sciences through observation, experimentation and modeling, and to provide excellent educational and research opportunities for graduate students in Bangladesh with degrees in Oceanography. Oceanography students at our university will learn basic knowledge in the classroom and reinforce their knowledge in laboratories, field research and during thesis. I expect that our students will explore the world to investigate the complex questions of the ocean's future, present and past through an intensive interdisciplinary education, both in the classrooms and in the fields. After completing the graduation from the Department of Oceanography at BSMRMU, our students can avail innumerable opportunities in different areas of the maritime sectors both in home and abroad. Our curriculum provides the tools and knowledge necessary to succeed in any component of the rapidly evolving workforce.

I finally hope that the journey of Department of Oceanography at BSMRMU will certainly benefit our country by widening maritime working opportunities in the oceans focusing the Bay of Bengal.

BSc (Hons) in OCEANOGRAPHY

Introduction

1. The Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU), Bangladesh offers BSc (Hons) in Oceanography program. The main purpose of the program is to train the students in relevant areas of Oceanography to be professional in maritime sectors. The Department of Oceanography aims to advance knowledge of all facets of the ocean environment around Bangladesh. The goal of the department is to advance marine sciences through observation, experimentation and modeling, and to provide excellent educational and research opportunities for graduate students in Bangladesh with degrees in Oceanography.

2. **Duration of the Programme**

The BSc (Hons) Program is a 4 year full time regular undergraduate program. The program is divided into 8 semesters of 6 months each (2 semesters in each year). The duration of each semester is 26 weeks. In each semester, 16 weeks is dedicated for classroom learning, while remaining weeks are utilized for makeup classes, preparatory leave, final examination and other curricular and co-curricular activities.

Distribution is as follows:

a.	Classes/ Field visit	16 weeks
b.	Mid Term Examinations	01 week
c.	Preparatory Leave	02 weeks
d.	Term Final Examination	03 weeks
e.	Recess	04 weeks

Credits of the Programme

3. This BSc (Hons) programme is designed with 160 Credits full time programme.

Admission Criteria

4. Applicants must fulfil the admission requirements as prescribed by Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh (BSMRMU). To be eligible for admission in the program, a candidate must pass SSC/Dakhil and HSC/Alim examinations or its equivalent in Science discipline. Minimum qualifications to take part in the admission test are as follows:

a. Applicants who have passed HSC or equivalent examination in the current year or one year before the notification for admission are eligible to apply.

b. Applicants must have passed SSC/equivalent examination and HSC/ equivalent examination from Board of Intermediate and Secondary Education/ Madrasa Education Board/ Technical Education Board in Science group with minimum GPA 4.00 in a 5-point scale.

c. In HSC/Alim/ equivalent examination the applicant must have obtained minimum "A" grade in any two (02) Courses out of five (05) courses including Mathematics, Physics, Chemistry, Biology and English with minimum "B+" (B plus) grade in rest Courses.

d. Applicants with GCE must have passed at least five subjects in O level (including physics, chemistry and mathematics) and at least two subjects in A level (including physics/mathematics). However applicants having more than two 'C' grades in O level and/or more than one 'C' grades in A level shall not be eligible for admission.

e. Foreign applicants shall apply through their respective embassy. Educational qualifications are same as applicable for Bangladesh students.

Admission Test

5. The admission notice shall be circulated usually in the month of August/September of each year through media advertisement, BSMRMU website and notice board. All eligible applicants shall be required to appear the admission test as per BSMRMU Admission Policy. Admission test shall normally comprise of a written test. Syllabus of admission test shall be that of current HSC Syllabus. The subjects of written admission test are as follows:

a. Physics
b. Chemistry
c. Mathematics
d. Biology
e. English

However BSMRMU reserves the right to call qualified candidates for interview before final selection

Final Selection

6. The merit list shall be prepared according to combined marks obtained by candidates in the written admission test. The marks for public examinations shall be calculated in a simple linear distribution method from candidates' GPA. The weightage of written admission test and public examination shall be as follows:

Ser No	Description	Marks
1.	Admission Test	80
2.	HSC/equivalent	50
3.	SSC/equivalent	30

Registration/Admission in the Program

7. After final selection, selected candidates shall be registered with the programme in accordance with the procedures as laid down by BSMRMU. The candidates will go through a medical checkup at BSMRMU designated Medical Centre to ascertain their medical fitness. The selected candidates shall have to collect Admission Form from Admission Section and complete admission and registration formalities within the given time frame by paying required fees. The following rules shall apply in this regard:

a. If a candidates fails to complete admission formalities within the prescribed time from, his/ her selection will be considered as cancelled.

b. If a student fails to attend the class within two weeks of the commencement of 1st semester class, his/her admission will be considered as cancelled.

Grading System

8. Letter grades and corresponding grade points will be awarded in accordance with the provisions (unified UGC grading system) shown below:

Grade	**Grade points**	**Numerical Markings**
A+	4.0	80% and above
A	3.75	75% to below 80%
A-	3.50	70% to below 75%
B+	3.25	65% to below 70%
B	3.00	60% to below 65%
B-	2.75	55% to below 60%
C+	2.50	50% to below 55%
C	2.25	45% to below 50%
D	2.00	40% to below 45%
F	0.00	below 40%
I	Incomplete	-
W	Withdrawn	-
X	Projects/Thesis continuation	-
E	Expelled	Due to exam offence

Conduct of Courses

9. In a semester, teacher/teachers shall be assigned to plan and teach a particular course. The following guidelines shall be followed for conduct of courses:

a. At the beginning of the semester, the course teacher will prepare a course outline incorporating the course syllabus, performance evaluation and grading system

(as laid down in the policy), list of suggested text books/references, and a tentative schedule of classes, examinations and events.

b. **Assignment of Credits.** The assignment of credits to theoretical course is different from that of laboratory course, which is stated as follows:

(1) For theoretical courses one lecture of 60 minutes per week per term is equivalent to one credit.

(2) For laboratory courses three class hours per week per term is equivalent to one credit.

(3) Credits are also assigned to thesis work taken by the students. The amount of time assigned to such work may vary depending on the thesis.

c. A thesis work shall be assigned, either individually or in groups on any issue pertaining to the course.

d. A number of individual and group assignments, presentations, etc shall be assigned to students as per the course requirements.

Performance Evaluations

10. **For Theory Courses**

Fifty percent (50%) of marks of theoretical course shall be allotted for continuous assessment, i.e. quizzes, class tests, home assignments, class evaluation and class participation etc. Term Final Examination is conducted centrally by BSMRMU. Term Final Examination will be of 3-hour duration. Distribution of marks for a given course is as follows:

a. Class Attendance: 05%

b. Class Participation/Observation: 05%

c. Term Paper/Assignment: 10%

d. Quizzes/Class Test: 10%

e. Mid Term Examination: 20%

f. Term Final Examination: 50%

11. The number of quizzes/ class tests of a course shall be *n+1,* where *n* is the number of credits of the course. Evaluation of performance in quizzes/ class tests will be on the basis of the best *n* quizzes. The scheme of continuous assessment that a particular teacher wishes to follow for a course will be announced as course outline on the first day of the term. The

performance of a student will be evaluated in terms of two indices, viz. Semester Grade Point Average (SGPA), and Cumulative Grade Point Average (CGPA).

12. **For Practical Courses** The distribution of marks for three types of Laboratory is given below:

a. Project /Lab Test/ Computer Test - 40%

b. Quiz - 20%

c. Viva/ Presentation - 10%

d. Attendance - 10%

e. Assignment / Report - 10%

f. Class Performance / Observation - 10%

13. For Field Trip

a. General Observation/ Participation - 20%

b. Report Submission - 40%

c. Presentation - 40%

The Requirements for Promotion to the Next term

14. The requirements for promotion to the next term are as follows:

a. A student has to take the required courses for a particular term/level as per the syllabus of the program.

b. A student shall be promoted to the second term (Term-II) of each level, irrespective of his/her results in the first term of the level provided he/she does not have 'F' grades in more than two subjects including backlog subjects (if any).

Credit Earned

15. The Courses in which a student has obtained 'D' or a higher Grade shall be counted as credits earned by him/her. Any course in which a student has obtained 'F' grade shall not be counted towards his/her earned credits. 'F' grade must be cleared within designated period.

Degree Requirements

16. Degree requirements are as follows:

a. Completion of courses for the minimum required credits of 160 in maximum period of six academic years.

b. Appearing at the final examination in all the required courses as per syllabus of the programme.

c. Successful completion of defence of thesis paper.

d. Scoring a CGPA 2.25 or above.

Retaking a Course

16. It is expected that students will obtain degree by clearing the entire offered courses of specified credit hours as per the syllabus within six academic years' period. In case of failure to do so by any student the following guiding policies shall be adopted:

a. A student obtaining F grade in a course may be allowed to repeat the course with the prior approval of the Head of the Department on the recommendation of the course coordinator. Such approval shall be reported to the BUGSR and academic council.

b. Two courses of any semester may be repeated for improvement with the prior approval of the Head of the Department on the recommendation of the course coordinator. Such approval shall be reported to the BUGSR and Academic Council.

Course Designation System

17. Each course is designated by a maximum of four letter code identifying the department offering the course followed by a four-digit number having the following interpretation:

a. The first digit corresponds to the year/level in which the course is normally taken by the students.

b. The second digit corresponds to the semester/term in which the course is normally taken by the students.

c. The last two digits denote various courses, where an odd number is used for theoretical courses and an even number for Laboratory/Practical courses.

Semester Wise Distribution of the Courses

18. Semester wise Distribution of the courses is given below:

Semester 1:			
SL	**Sub Code**	**Subject**	**Credit**
1	OCN 1101	Marine Ecology	3
2	OCN 1102	Marine Ecology Lab	1.5
3	OCN 1103	Marine Resources	3
4	OCN 1105	Communicative English	3
5	OCN 1107	Physics	3
6	OCN 1108	Physics (Lab)	1.5
7	OCN 1109	Mathematics	3
8	OCN 1111	Field Trip	1.5
		Total	**19.5**
Semester 2:			
9	OCN 1201	Chemistry	3
10	OCN 1202	Chemistry Lab	1.5
11	OCN 1203	Bay of Bengal Studies	3
12	OCN 1205	Numerical Techniques for Oceanographers	3
13	OCN 1207	Computer Programming for Oceanographers	3
14	OCN 1208	Computer Programming for Oceanographers (Lab)	1.5
15	OCN 1209	Physical Oceanography	3.0
16	OCN 1210	Physical Oceanography Lab	1.5
		Total	**19.5**
Semester 3:			
17	OCN 2101	Chemical Oceanography	3
18	OCN 2102	Chemical Oceanography (Lab)	1.5
19	OCN 2103	Marine Invertebrates	3
20	OCN 2104	Marine Invertebrates (Lab)	1.5
21	OCN 2105	Marine Vertebrates	3.0
22	OCN 2106	Marine Vertebrates (Lab)	1.5
23	OCN 2107	Statistical Techniques for Oceanographers	3
24	OCN 2109	Field Trip	1.5
		Total	**18.0**
Semester 4:			
25	OCN 2201	Geological Oceanography	3
26	OCN 2202	Geological Oceanography (Lab)	1.5
27	OCN 2203	Fisheries Oceanography	3
28	OCN 2204	Fisheries Oceanography (Lab)	1.5
29	OCN 2205	Biological Oceanography	3
30	OCN 2206	Biological Oceanography Lab	1.5
31	OCN 2207	Law of the Sea	3
32	OCN 2209	Marine Planktology	3
33	OCN 2210	Marine Planktology (Lab)	1.5
		Total	**21.0**

Semester 5:			
34	OCN 3101	Sedimentology	3
35	OCN 3102	Sedimentology (Lab)	1.5
36	OCN 3103	Oceanographic Instrument	3
37	OCN 3105	Meteorology and Ocean Forecasting	3
38	OCN 3107	Seismology and Hydrocarbon Exploration	3
39	OCN 3109	Environmental Impact Assessment	3
40	OCN 3111	Paleontology	3
41	OCN 3113	Field Trip	2
		Total	**21.5**
Semester 6:			
42	OCN3201	Geophysical Fluid Dynamics	3
43	OCN 3203	Seamanship and Navigation	3
44	OCN 3205	Hydrography	3
46	OCN 3206	Hydrography (Lab)	1.5
47	OCN 3207	Marine Biogeochemistry	3
48	OCN 3209	Marine Microbiology	3
49	OCN 3210	Marine Microbiology (Lab)	1.5
50	OCN 3211	Acoustical Oceanography	3
		Total	**21.0**
Semester 7:			
51	OCN 4101	Research Methodology	3
52	OCN 4103	Satellite Oceanography	3
53	OCN 4105	Coastal and Marine Pollution	3
54	OCN 4106	Coastal and Marine Pollution Lab	1.5
55	OCN 4107	Marine Ecosystem Modeling	3
56	OCN 4108	Marine Ecosystem Modeling (Lab)	1.5
57	OCN 4109	Data Collection & Analysis in Oceanography	3
58	OCN 4110	Data Collection & Analysis in Oceanography (Lab)	1.5
59	OCN 4111	Field Trip	2
		Total	**21.5**
Semester 8:			
60	OCN 4201	Integrated Coastal Zone Management	3
61	OCN 4203	Coastal Morphology and Process	3
62	OCN 4205	Marine Biodiversity and Conservation	3
63	OCN 4207	Global Climate Change	3
64	OCN 4209	Thesis	6
		Total	**18.0**
Grand Total - 160 Credits			

Fees Structure

17. Fees for BSc (Hons) in Oceanography are given as follows:

Sr. No	Items	Description	Proposed Fee for BSMRMU
1.	Admission fee	Once for 4 Years	10,000.00
2.	Registration fee	Per semester 500 Total 8 semester	4000.00
3.	Tuition fee (Per Credit)	Per Credit 300 Total 160 credits	48,000.00
4.	Examination fee	Per Course 300 Total 64 courses	19,200.00
5.	Security Money (Refundable)	Once for 4 Years	20,000.00
6.	Library fee	Once for 4 Years	4000.00
7.	Cultural fee	Once for 4 Years	1000.00
8.	Sports fee	Once for 4 Years	1000.00
9.	Student Welfare fee	Once for 4 Years	8000.00
10.	Computer Lab fee	Once for 4 Years	5000.00
11.	Education Enhancement fee	Once for 4 Years	15000.00
12.	ID card	Once for 4 Years	100.00
13.	Grade Sheet	Once for 4 Years	2800.00
14.	Internship	Once for 4 Years	3000.00
15.	Medical Fee	Once for 4 Years	4000.00
16.	Centre fee	Per Semester 500 Total 8 semester	4000.00
			Total=TK 1,49,100.00

Application Processing (Once)	500.00
Re-admission	5000.00
Migration fee	300.00
Provisional Certificate	500.00
Transcript	500.00
Late Registration fee	100.00
Academic Calendars	100.00
Transport fee (If Provided)	5000.00
Total	**Tk 12,000.00**

Total = Tk 1,49,100.00+12,000.00=**1,61,100.00**

Educational Development Charge=**20,000.00**

Grant Total = Tk 1,61,100.00+20,000.00=**1,81,100.00**

Deadline for Payment of Fees

18. All payments are to be completed semester wise and the semester wise payment dates will be published in the website as well as be displayed on the notice board of BSMRMU.

Late Fee

19. A fine of TK 500/- per 15 days will have to be paid for late deposition of fees up to a maximum period of next one month. If a student fails to clear dues within 15 days after the class commences next one month of the stipulated time mentioned, his/her name will be dropped. In such case, the student has to apply to the Dean for readmission with necessary penalties and fees if he/she desires to continue, within a maximum period of next 15 days.

Withdrawal Policy

20. BSMRMU has been established with an aim of providing quality education in various disciplines of maritime sector. A defined standard of education and general discipline will be followed in every level of the program. The unsuccessful students will therefore be withdrawn from the university.

21. The definition of the withdrawal policy will be as follows:

21.1 **Withdrawal**. The term 'Withdrawal' will imply a complete discontinuity from the programme of the university.

21.2 **Temporary Withdrawal**. The term 'Temporary Withdrawal' means that the student has been allowed by the Academic Council, BSMRMU to discontinue temporarily. The student, so withdrawn, may re-enter the course as per terms and conditions set by the authority.

21.3 **Permanent Withdrawal**. The term 'Permanent Withdrawal' means a permanent, voluntary discontinuity from the programme. The implication of permanent withdrawal includes cancellation of admission and expiry of registration. Once a student is permanently withdrawn, he/she will require a readmission and fresh registration to re-enter in the programme.

21.4 **Expulsion**. The term 'Expulsion' means expulsion from the university on disciplinary ground. A student, if expelled, will never be allowed to re-enter the course or similar programs in BSMRMU and be subjected to other terms and conditions as set by the authority while approving the expulsion order.

21.5 **Temporary Expulsion**. The term 'Temporary Expulsion' means expulsion from an academic programme for a certain period on disciplinary ground. A student, if expelled temporarily, may be allowed to re-enter the course / programme on expiry of the punishment period and on fulfillment of other terms and conditions (if any) as set by the authority while approving the temporary expulsion order.

21.6 **Expulsion for Good.** The term 'Expulsion for Good' means a permanent, forced withdrawal from the ongoing programme. The implication of 'Expulsion for Good' includes cancellation of admission and expiry of registration. Once a student is

expelled, he/she will require a readmission and fresh registration to re-participate in the programme.

22. **Withdrawal for Poor Performance**. The rules on withdrawal on poor performance are given below:

22.1 A student must maintain a minimum GPA (for 1st semester) or CGPA of 2.20 in a 4.00 point rating scale in the programme. Any student obtaining a CGPA of less than 2.20 at the end of any semester shall not be allowed for the next semester. However, when a student fails to maintain a CGPA of 2.20 at the end of a semester, he/she will be placed on probation. Failure by a student placed on probation to raise the CGPA to 2.20 in the immediately next semester will result in his/her relegation to the lower batch, where he/she will remain on further probation. Failure by a student placed on probation for the second time to raise the CGPA to 2.20 will lead to withdrawal from the programme.

22.2 While on 2nd probation, a student has to undertake all the semester courses in which he/she previously obtained less than D grade. Upon clearing the 2nd probation, a student will be withdrawn if he/she subsequently obtains CGPA of less than 2.20. However, a student failing to obtain and maintain a CGPA of 2.20 at the end of the final semester shall be allowed to repeat course(s) of the final semester in which he/she has earned below D grade. This opportunity will be given to any student only once. Even after repeating the course(s), if a student fails to raise CGPA to 2.20 at the end of final semester, he/she will not be awarded the degree.

23. **Withdrawal on Own Accord.** MBA Programme run by BSMRMU requires persistent hard work by the students throughout the Programme. Few students may face difficulties in keeping pace with quality requirements of the Programme. BSMRMU will have no option other than withdrawing unsuccessful students to ensure quality education and maintain standard. A student may be dismissed from the Programme on disciplinary ground. A student may also be withdrawn on own accord subject to the approval of the Academic Council of BSMRMU. The student can withdraw himself from admission under the two categories.

23.1 **Temporary Withdrawal**. A student who has already completed some courses and has not performed satisfactorily or for any other personal reasons and exigency may apply for a withdrawal / temporary withdrawal. Academic Council may allow a student to take temporary withdrawal from a course or the programme due to sickness or any other reason and exigency. A student must hold minimum CGPA of 2.25 in 4.00 point rating scale for BSc in Oceanography Programme at that point of time. Temporary withdrawal from the first semester of the programme is not allowed. The student must apply for such temporary withdrawal within six weeks (for BSc in Oceanography Programme) from the beginning of the semester for any reason other than sickness. However, for extreme emergencies including sicknesses, a student may apply for temporary withdrawal any time during the semester. If student applies for temporary withdrawal before half the duration of the semester, 30% of the differed semester fees may be returned. Upon re-entry, the student must complete the required courses of- the programme remaining in force. The student can only be accommodated within the course offered for the regular students. A student however,

must complete the programme within valid registration period from the date of initial registration after which his/ her registration will be cancelled.

23.2 **Permanent Withdrawal**. A student may apply for a permanent withdrawal due to poor academic performance, sickness, or any other reason in any semester. If approved by academic Council, his/her admission and registration will be cancelled.

24. **Dismissal on Disciplinary Ground.**

24.1 **Unfair Means.** Adoption of unfair means may result in the dismissal of a student from the programme and expulsion from the university subject to the decision of the BSMRMU disciplinary committee. Following would be considered as unfair means adopted during examinations and other contexts:

24.1.1 Communicating with fellow students for obtaining help in the examination.

24.1.2 Copying from another student's script/paper/report.

24.1.3 Copying from desk or palm of a hand or from other incrimination documents.

24.1.4 Possession of any incriminating document whether used or not.

24.1.5 Possession and/or Uses of mobile phone and any other communicating electronic device

24.2 **Influencing Grades**. Academic council may dismiss any student for approaching directly or indirectly in any form to influence a teacher for grades.

24.3 **Disciplinary Ground.** Academic council may dismiss any student on disciplinary ground if any form of indiscipline or unruly behavior is observed in him/ her which may disrupt the academic environment or programme or which is considered detrimental to BSMRMU's image. Proctorial Board will process such matter.

Facilities

25. The university provides following facilities for the students:

25.1 **Wi Fi Network.** BSMRMU has well connected wi-fi networks. Students have the access to use internet at any floor by unlocking the password.

25.2 **BSMRMU Library.** BSMRMU has library facility located on the 3rd floor of the building. The library is growing fast with stock of books to meet the requirements of the teachers and the students. The library is focused to build its e-resources keeping in view the recent trend in publication of reading material in the e-platform. The library provides computer work stations with internet facility, hard copies of text and reference books, e-book readers etc. It subscribes many periodicals and newspapers.

25. 3 **BSMRMU Canteen.** On the 3rd floor there is a well decorated canteen. This canteen has access to everybody of the university.

25.4 **BSMRMU Auditorium.** There is an auditorium on the 5th floor of the BSMRMU campus with 100 seat capacity, which can be used for central programs like seminar, workshop, central lectures and presentations, cultural events etc.

25.5 **Classrooms.** The classrooms of BSMRMU are spacious and well ventilated, air conditioned and equipped with state of the art audio-visual equipment, classroom aids and seating arrangements.

25.6 **Computer Lab.** There is a computer lab facility for the students on the 3rd floor of the campus. The lab computers are connected by both WiFi and broadband internet network. This facility has been established with a view to enhancing computer literacy and skill of the students.

25.7 **Guest Lectures/Seminars.**

Seminars/workshops on important maritime/ academic/ business issues and lectures/presentations by eminent academician/professionals/experts in home and abroad are organized throughout the academic year for the students and all stakeholders.

Dress Code

26. The way a student dresses up in the classroom determines how people perceive him or her as a professional/executive. The authority has the right to implement some kinds of dress code for its students as class room attire. The dress code for this university is given below:

a. **Male Students**

Summer (March-November)	Winter (December- February)
1. Sober coloured trouser/pant with waist belt 2. Sober coloured full/ half sleeved shirt duly tucked in 3. Deep coloured shoes (Business type) 4. Suit/ Blazer (Optional)	1. Sober coloured trouser/pant with waist belt 2. Sober coloured full sleeved shirt duly tucked in 3. Suit/ Blazer (Preferred) 4. Sober coloured and designed Jacket/Sweaters 5. Tie (Appropriate, adjusted with shirt/ trousers) 6. Deep coloured shoes (Business type)

b. **Female Students**

Summer (March-November)	Winter (December- February)
1. Sober coloured salwar and kamiz or trouser/pant and kamiz with appropriate scarf (orna) 2. Appropriate ladies shoes/ sandals 3. Women suit/blazer with shirt (optional)	1. Sober coloured salwar and kamiz or trouser/pant and kamiz with appropriate scarf (orna) 2. Appropriate ladies shoes/ sandals 3. Women suit/blazer with shirt (preferred)

4. Scarf in head (optional) 5. Sobered and appropriate jewelry	4. Sober coloured and designed jacket/sweater/cardigan 5. Scarf in head (optional)

c. **Makeup**

(1) Sobered makeup should be followed and extra makeup should be avoided

(2) Sobered and appropriate perfume can be used

d. **ID Card.** Students must hang their ID card in a manner so that it is visible while they are in the campus.

e. **Avoided Dress and Makeup**

(1) T-shirt, frayed shirts and sweatshirt
(2) Sleeveless kamiz/blouses and tops
(3) Leggings, stretch pants, cargo style pants, sweatpants, frayed pants, three quarter pants and all kind of skirts
(4) Denim/Jeans (pants or shirts), leather trousers/pants
(5) Sandals, choppol, sports/ casual shoes and pencil hilled shoes
(6) Eared cap/ muffler
(7) Acute perfume
(8) Shoes with unadjusted shorts
(9) Cap/hat
(10) Any kind of indecent clothing

Disclaimer

27. The university authority reserves the right to cancel/ modify/ change any information given in this prospectus.

Course Description in Short

BSc (Hons) in Oceanography

OCN 1101: MARINE ECOLOGY

Definition, Scope and type of ecology, Marine environment, Coastal habitats, Major ecological divisions of marine habitats, Comparative study of the flora and fauna of fresh water, Brackish water and marine ecosystems, Floral and faunal characteristics of sandy, muddy and rocky beaches, Factors controlling the adaptation and distribution of marine organisms, Food chain, food webs and ecological niche in marine environment, Ecology of the Bay of Bengal and its major estuaries, Geographical position and comparative study of the three major oceans, Concepts of Biodiversity.

OCN 1102: MARINE ECOLOGY (LAB)

Preparation of model showing zonation of the sea, Quantitative study and biodiversity determination of marine organisms in the open water, Coastal water and floor of the sea, Laboratory practices in determination of various ecological parameters, Determination of DO consumption and Salinity tolerance of selected aquatic organisms

OCN 1103: MARINE RESOURCES

Animal resources: Marine Invertebrates, Marine Vertebrates, Plant resources, Salt production, Tourism, Sea port, Ship recycling, Heavy minerals, Marine Gas and Oils, Mari culture (based on shrimp farming)

OCN 1105: COMMUNICATIVE ENGLISH

Functional Grammar: Right forms of verbs, Use of tenses, Parts of Speech, Articles, Use of active and passive voice, Appropriate preposition, Use of modal verbs, Subject verb agreement, Narration, Transformation, Conditionals, Tag questions, Error corrections, Developing Reading Skills, Developing Writing Skills- Paragraph writing, Writing different types of essays, Letter and email writing, Translation from Bangle to English and vice versa, Developing Speaking Skills, Developing Listening Skills

OCN 1107: PHYSICS

General considerations of physics and their relevance to oceanography, Physical quantities, Newton’s laws of motion, Work and Energy, Oscillation, Gravitation, Surface tension, Fluid, Heat and Thermodynamics, Light, Basic concepts on (a) electricity (b) electronics and (c) radioactivity

OCN 1108: PHYSICS LAB

Surface tension of water, Specific heat, Measurement of temperature, resistance and electricity, Newton’s ring experiment, Plotting and interpretation of graphs, Archimedes' Principle (Buoyancy), The Nature of Sound and determination of sound speed, Physical optics (wave length and light propagation),Thermal physics, Showing videos on the processes of Earth System (Coriolis force, ocean circulation etc.)

OCN 1109: MATHEMATICS

Algebra- Set theory, Theory of equation, Matrix; Differential Calculus- Functions, limit, exponential function, derivative & higher order derivatives, rule of differentiation of standard functions, partial and total differentiation, change of variables, Integral Calculus- Integrals of standard functions, exponential functions, definite integrals, double integrals, Differential Equations- Ordinary differential equation of 1st & 2nd order, Logarithms, Vector Analysis.

OCN 1201: CHEMISTRY
Modern concept of the structure of atom, Periodic classification of elements: General treatment and application, Concept of valiancy: General treatment of the different bond types, bond angles, shapes of molecules, Modern views on acids and bases, Classification of chemical reactions, Oxidation and reduction reactions, Principles of volumetric analysis, pH and buffer action, uses of different types of indicators, General study (nomenclature, methods of preparation, physical properties, reactions and important uses) of aliphatic, salicylic and aromatic compounds polycyclic compounds, natural alkaloids, Diffusion, osmotic pressure, colloids, emulsions, depression of freezing point, (flouressure, phosphorescence).

OCN 1202: CHEMISTRY LAB
Preparation of solutions and Volumetric analysis: Acid base titrations, Oxidation reduction titrations; Precipitation titrations, Preparation of standard: N/10 $K_2Cr_2O_7$ solution and Standardization of $Na_2S_2O_3$.

OCN 1203: BAY OF BENGAL STUDIES
Bay of Bengal History, General Information, Circulation, Bay of Bengal Pattern, Living and Non-living ocean resources, Environmental change, Pollution of the marine environment, Bay of Bengal Trades

OCN 1205: NUMERICAL TECHNIQUES FOR OCEANOGRAPHERS
Introduction, Equations and approximations, Parameterization of mixing in ocean models, Finite differencing and grid choices, Quasi- Geostrophic and Shallow-Water models, Classification of ocean models by vertical grid choices, Boundary Conditions, Diagnostic models

OCN 1207: COMPUTER PROGRAMMING FOR OCEANOGRAPHER
Introduction to computer hardware, software, types, capabilities, Application of computers, System software, Application software: Definition, major types, Case types, Other major types; Social, ethical issues in computing, Programming with Fortran/C/C++

OCN 1208: COMPUTER PROGRAMMING FOR OCEANOGRAPHER (LAB)
Using OS: File and printing services, Word processing using Microsoft Word, Spreadsheet exercises using Microsoft Excel and selected software for graphics, Data analyses and graphing using Excel, Making presentation using Microsoft PowerPoint, Database design using Microsoft Access, Internet clients: Internet Explorer, Outlook express; Exercises in writing simple programs in BASIC and programming related with Fortran.

OCN 1209: PHYSICAL OCEANOGRAPHY
Prolog, History of Oceanography, Physical properties of sea water, Sound and light in sea water: Propagation, attenuation, extinction, color of sea, Freezing, Sea Ice and ice bergs, Water, salt and heat budget and flux, Ocean Wave, Ocean circulation, Astronomical Tides, Dynamics of physical Oceanography.

OCN 1210: **PHYSICAL OCEANOGRAPHY (LAB)**
Measurement of seawater properties: Salinity, Electrical Conductivity, Density, Calculation of various water properties from known parameters: Salinity, EC, Density, Sound velocity, Pressure, Depth, Specific heat, Adiabatic lapse rate, Freezing point, Potential temperature, Potential density, Temperature of maximum density etc., Use of TS diagram to derive

salinity, density and temperature, to examine water masses and their mixing, Making profile: Temperature, Salinity, Density, Electrical Conductivity etc., Problems relating to wave theory and wave parameters.

OCN 2101: CHEMICAL OCEANOGRAPHY

Chemistry of water and sea water, Major and minor elements in sea water, Composition of sea water, Chemistry of air-sea interface, Trace elements and their biological roles, Nutrients in the sea, Dissolved gasses in sea water, The carbon dioxide & carbonates system, Solubility of salts in seawater, The oxidation-reduction potential of seawater. (pH, Eh, etc.), Inorganic agencies effecting the composition of sea water, Biological and chemical aspects of dissolved organic material in sea water, Radioactive and stable isotopes, Marine natural product chemistry, Basic idea about chromatography, Theory and principle of TLC, GLC, HPLC column, Preparation of artificial sea water, Geochemistry and marine environment, Chemical features of Indian Ocean and Bay of Bengal, Greenhouse gases and its effects in the Bay of Bengal.

OCN 2102: CHEMICAL OCEANOGRAPHY (LAB)

Volumetric analysis: Acid base titrations, Oxidation Reduction titrations; Precipitation titrations, Preparation of standard for sea water, Determination of pH, Eh, minor, trace and major elements of sea water and sediments, Determination of Carbonates, bicarbonates and hydrocarbon, Determination of Nitrate, phosphate and silicate etc.

OCN 2103: MARINE INVERTEBRATES

Classification of marine invertebrates, Salient features of major invertebrates, Study of different phyla of marine invertebrates, Anatomy of major marine invertebrates, Organ systems of major marine invertebrates, Distributional pattern of major phyla in the marine environment, Ecology of different marine invertebrates.

OCN 2104: MARINE INVERTEBRATES (LAB)

Collection, preservation and identification of invertebrates, Study of external morphological features of microscopic marine invertebrates, Study of external and internal anatomy of higher marine invertebrates, Museum study of marine invertebrates-corals, sea urchin, sea anemones, crustaceans, mollusces, polychaetes etc.

OCN 2105: MARINE VERTEBRATES

Introduction: The Science of Marine Biology, The Sea Floor, Properties of Sea Water, Fundamentals of Biology, The Microbial World, Seaweeds and Plants, Invertebrates, Vertebrates: Cartilaginous Fishes, Shark, Bony Fishes, Marine Reptiles and Sea Birds, Marine Mammals, Marine Ecology, Between the Tides, Estuaries, The Continental Shelf, Coral Reefs, Life near the surface, The Ocean Depths, Humans/resources and the sea.

OCN 2106: MARINE VERTEBRATES (LAB)

Collection, preservation and identification of vertebrates, Study of external morphological features of marine vertebrates, Study of external and internal anatomy of higher marine vertebrates, Museum study of marine Vertebrates: Cartilaginous Fishes, Shark, Bony Fishes, Marine Reptiles and Sea Birds, Marine Mammals etc, commercially important species of vertebrates (Report/presentation)

OCN 2107: STATISTICAL TECHNIQUES FOR OCEANOGRAPHER

Definition, scope and importance of statistics in oceanography, Presentation of data, Graphical Representation, Measures of Central Tendency, Measures of Dispersion, Moments, Skewness and Kurtosis, Correlation and Regression, Probability Distribution, Sampling, Basic ideas of test, Experimental design, Test of significance, Non parametric tests: Introduction, advantage of nonparametric tests, rank sum test, Mann- Whitney test, Spearman's rank Correlation, Kolmogorov-Smirnov sample test, Wilcoxon Signed Rank test, Time series and forecasting.

OCN 2201: GEOLOGICAL OCEANOGRAPHY

Introduction: Brief history of marine Geology and geological time scale, Early mapping, positioning and sampling techniques, General Geological and physiographic features of the Earth, Physiographic features of the Ocean and Ocean basins, Eustatic changes of sea level, causes and methods of study(Tsunamis, turbidity currents), Earthquakes, volcanism and mountain building in the sea, Evolution of the Indian ocean floor, Topography and sediments of the floor of the Bay of Bengal, Heavy minerals in the coastal beaches of Bangladesh, Deep sea deposits: brown clay, manganese nodule and oozes, Calcium carbonate and foraminifera deposition in the sea.

OCN 2202: GEOLOGICAL OCEANOGRAPHY (LAB)

Preparation of bathymetric charts and interpretation, Collection, separation and identification of heavy minerals, Deep sea sediment analysis, manganese nodule and foraminifera's collection and identification, Preparation and interpretation of sediment maps and triangle coordinate diagram from analytical data.

OCN 2203: FISHERIES OCEANOGRAPHY

Systematic of fish and shellfish, Fishing crafts and gears used in the Bay of Bengal, Fish population and their dynamics, Fishing forecasting, Fisheries monitoring, Fishery technology, Climate variability and fisheries ecosystems, FAO code of conduct for responsible fisheries and Marine fisheries ordinance of Bangladesh.

OCN 2204: FISHERIES OCEANOGRAPHY (LAB)

Identification of fishes, crustaceans and mollusks, Biometric study of fishes and prawns, Gut content analysis, age determination, maturity determination of reproductive organs, Observation of different types of crafts and gears used in the Bay of Bengal, Determination of growth rates, mortality and overfishing, Detection of fishing and no fishing zone for commercial fisheries.

OCN 2205: BIOLOGICAL OCEANOGRAPHY

Plankton-Definition, classification, morphology and importance of plankton, Phytoplankton bloom, Benthos: General concept and importance of benthos in the ocean, Mangroves, Marine aquarium and park organisms-Classification, Ecology and distribution of aquarium and park organisms.

OCN 2206: BIOLOGICAL OCEANOGRAPHY (LAB)

Collection, preservation and identification of plankton and benthic organisms, Estimation of productivity, POC, DOC and Biomass, Preparation of plankton and benthos slides, Culture of Phytoplankton and zooplankton, Field trip for studying the marine aquarium and its operation.

OCN 2207: LAW OF THE SEA

Introduction to the Law of the Sea, Maritime Territory, Territorial Sea, Functional Marine Zones, Implications of the EEZ, The Legal regime of the continental shelf, The legal regime of the deep sea bed, The Legal regime of the high seas, Legal Fisheries Regime, Marine Pollution Legal Regulation, Marine Scientific Research

OCN 2209: MARINE PLANKTOLOGY

Definition, classification and importance of Plankton, Phytoplankton, Zooplankton, Phytoplankton-Zooplankton relationship, Fish-plankton relationship, Plankton collecting gears, Determination of plankton biomass, occurrence, abundance, species richness, Plankton of the coastal waters of Bangladesh

OCN 2210: MARINE PLANKTOLOGY (LAB)

Preparation and handling of plankton collection equipments, Collection, preservation, identification and estimation of plankton, Laboratory and mass culture of Phyto/zooplankton, Preparation of plankton slides, Determination of productivity, Determination of Zooplankton Biomass, Salinity tolerance of plankton

OCN 3101: SEDIMENTOLOGY

The physics of the fluids, Hydrodynamics, Open channel flows, Sediment movement, Bed forms and bed roughness, Sediment transport and deposition in the Bay of Bengal, Marine Sedimentary and Environmental Evolution.

OCN 3102: SEDIMENTOLOGY (LAB)

Flow observation-Open channel flow, Hydraulic jump, Flow distribution, Flow measurement-use of current meter in natural conditions, construction of velocity graphs, Sediment movement- Initiation of movement, justification of erosion and stable condition, Bed form observation-Different structures in the channel floor, roughness, Field observation-Erosion-deposition characterization of the tidal flat, Preparation of bathymetric charts and interpretation, Measurement of sediment movement.

OCN 3103: OCEANOGRAPHIC INSTRUMENT

pH meter, Salinometer, Oxygen analyser, Lux meter, Potentiometeric titrations, Staining techniques, Centrifugation, Microscopy, Electron microscope, Chromatography, Gas chromatography, Electrophoresis, paper electrophoresis, Flame photometry and Atomic absorption spectroscopy, Isotope techniques, Spectroscopy, Winches, Reversing water bottle, Reversing thermometer, Radar and Satellite, A survey vessel study for hydraulics measurements.

OCN 3105: METEOROLOGY AND OCEAN FORECASTING

Introduction to meteorology, Air-Mass, Atmospheric Circulation, Fronts and Frontal disturbances: Air Mass boundaries, Active and Inactive Fronts, Warm and Cold Fronts, Depression weather, World weather types, The processing of weather information, Weather Forecasting, Tropical meteorology, Climatology of Bangladesh and adjacent Bay of Bengal, Tropical meteorology, Air-Ocean Interaction, Ocean and Climate Observation.

OCN 3107: SEISMOLOGY AND HYDROCARBON EXPLORATION

Introduction to meteorology-The causes of weather, Raw materials of weather studies, Air-Mass, Atmospheric Circulation, Fronts and Frontal disturbances, World weather types, The

processing of weather information, Weather Forecasting, Tropical meteorology, Climatology of Bangladesh and adjacent Bay of Bengal, Air-Ocean Interaction, Ocean and Climate Observation

OCN 3109: ENVIRONMENTAL IMPACT ASSESSMENT

Introduction- Definition of pollution, types, Green-house gases, Water Pollution, Sewage- and types of sewage, Characteristics of sewage, Industrial Wastes, Heavy Metals, Agro-Chemicals, Oil Pollution, Marine Pollution conventions and Law of the sea to control marine pollution.

OCN 3110: PALEONTOLOGY

Introduction, Indiana Today, The Lay Of the Land, A short history of North America, Where do Indiana's rocks come from?, Overview of Indiana Geology, Indiana Geological Survey, A Short history of life, Introduction To metazoan phyla, Ordovician, Silurian And Devonian, Mississippian, Carboniferous Carbonates in Indiana, Pennsylvanian, Evolution, Phylogeny, And Taxonomy, Industry In Indiana, Coal, Biostratigraphy, Correlation, And Extinction, What We miss, Quaternary Environments and glacial cycles, People Come to Indiana And the Late Pleistocene Extinction, Paleoindians And the White River Valley, Back To the present, and the future

OCN 3201: GEOPHYSICAL FLUID DYNAMICS

Introduction to Marine Geophysics, Seabed imaging by Sonar and Lidar, Seismic Exploration at sea, Marine Gravity Field, The Earth's Magnetic Field at sea, Heat Flow, Other Geophysical methods, Marine Geological Applications, Marine Geophysical Field and Lithospheric Dynamics.

OCN 3203: **SEAMANSHIP AND NAVIGATION**

General information on Seamanship and Navigation, Parts of the ship, Navigational Instruments, LSA and FFA, Charts, publications and terms, Voyage, Navigation, Safety, Seamanship, Tides, Electronic Navigation, Rules of the Road, Pilotage, Passage Planning, Fire Fighting.

OCN 3205: **HYDROGRAPHY**

Brief history of hydrography, importance of hydrography, fields of competence associated with hydrography, Principles of hydrographic surveying, Positioning, Horizontal and vertical control methods of hydrography, Instruments used to establish horizontal and vertical control, Depth determination, Seafloor classification and feature detection, Water levels and flow, Topographic surveying, Hydrographic practice, Hydrography of the Bay of Bengal, Coastal erosion, artificial nourishment and planning of coast protection, Coastal and offshore engineering processes and problems, Sea-walls, break-water, jetties and groins, Coastal protection processes from hydrographic movements.

OCN 3206: HYDROGRAPHY (LAB)

Collecting, recording and analysing the hydrograhic data using appropriate techniques in the field and laboratory, Preparation of hydrographic charts and interpretation.

OCN 3207: MARINE BIOGEOCHEMISTRY

A historical sketch of Biogeochemical cycles, Cycles of major elements in the deep ocean, Mass balance between river input and oceanic sediment outputs for minor and trace elements,

Biogeochemical cycles of carbon and sulfur, Si, P and Fe biogeochemical cycles, Primary production in the ocean: nutrient supply, prymaryroducers, seasonal cycles, spring bloom, nitrogen fixation, Elemental stoichiometry and Redfield ratio, Air-sea carbon dioxide fluxes, Climate change feedbacks on C – cycle, Ocean acidification and carbonate chemistry, Benthic processes of biogeochemical cycles.

OCN 3209: **MARINE MICROBIOLOGY**

General concepts and historical development of Marine Microbiology, Morphology, Structure Systematic study of bacteria, virus, yeasts and fungi, Marine microbial ecology, Physiology of Microorganisms, Role of Microorganisms in the transformation of different matters, oils and gases in the sea and associated nutrient cycle, carbon cycle and sulfur cycle, Relationships and differences between marine and terrestrial microorganisms; Deep sea and hydrothermal vents, microbial toxins, food poisoning, Microbial pollution of the marine environment (soil, water and live organisms), Ocean acidification and rapid changes in ocean chemistry, Economic importance and application of micro-organisms in Oceanography

OCN 3210: MARINE MICROBIOLOGY (LAB)

Perpetration of different types of culture media, Techniques of isolation and identification of marine micro-organisms, Quantitative and quantitative study of micro-organisms from water, Soil, Fish, Shrimp, and other fisheries organisms, Growth study, Culture techniques of marine micro-organisms.

OCN 3211: ACOUSTICAL OCEANOGRAPHY

Fundamentals, Simple propagation, Rays, sources and receivers, radiated sound, Bioacoustics, Waveguides, scattering by bubbles, Interior fluctuations and rough surfaces, The near surface ocean, Sensing of plankton and nekton, Passive acoustics and marine animals, Marine mammals, Ocean Dynamics: tomography time reversal, Turbulence Ocean Bottom, Large scale mapping other topics, Ocean energy devices.

OCN 4101: RESEARCH METHODOLOGY

Introduction to research methodology, meaning, objectives, types of research, methodology vs. methods, research process, qualities of a good research, problems of research in Bangladesh, Selecting and defining a research problem, Techniques of defining a problem, Design of research plan, Sampling strategies and methodology design of sampling programs, Data collection (Primary Method), Data collection (Secondary Method), Case study Method, Accuracy of results, Presentation of research findings, Research extension processes

OCN 4103: SATELLITE OCEANOGRAPHY

Remote Sensing- Introduction and scope of remote sensing, Sensor and satellite data, Satellite image processing, Interface Processes and Microwave Remote Sensing. Case Applications- Applications of GIS and RS in Marine and Coastal environments, GIS- Introduction to marine GIS, Mapping and scales, GIS data structure, Images and rasters/grids, Vectors, Attributes and database

OCN 4105: **COASTAL AND MARINE POLLUTION**

Introduction, Air Pollution- major sources of air pollution, Greenhouse gases, Water Pollution, Sewage, Industrial Wastes, Heavy Metals, Agro-Chemicals, Oil Pollution, Toxicology.

OCN 4106: **COASTAL AND MARINE POLLUTION (LAB)**
Assessment of Physio-chemical condition: DO, BOD5, COD, pH, S‰. Nutrients, Organic matter, Spectrophotometric analysis of organic and inorganic matters in water, Selected biological methods for the assessment of marine pollution; Bioassay test on shrimp, mollusca and fish, Physicochemical & Biological test of water quality, Determination of some trace elements, Determination of benthos from polluted area, Comparative study of organisms between polluted and unpolluted areas, Determination of Lethal Concentration/Dosage (LC50/LD50).

OCN 4107: MARINE ECOSYSTEM MODELING
General concept of modeling, Biological model and its abiotic and biotic components, Modelling Techniques, Modeling Case Studies, Statistical analysis and numerical modelling for oceanography data, Telemetry Technique and Ocean Model.

OCN 4108: MARINE ECOSYSTEM MODELING (LAB)
Data acquisition and analyses of biological, ecological and Open ocean models, Analysis of Least square and goodness of fit data, Principle component and factor analysis, Time series analysis.

OCN 4109: **DATA COLLECTION & ANALYSIS IN OCEANOGRAPHY**
Introduction, Natural History of the Course, CTD Cast, Bathymetry, Bathymetry Mapping, Halifax Harbour Background & Physical Measurements, CTD Data Plotting, Optical Measurements & Water Sampling, Nutrients; Optics, Phytoplankton & Nutrients, Secchi Disk & PAR Meter Data Analysis, Phytoplankton & Pigment Samples (Niskin Bottles), Plankton Net Tows, Deploy Sediment Traps, Plankton Microscopy, Respiration, Grazing, BOD, Pigment Analysis, Deploy BOD Bottles, Benthic Grabs, Sediment Coring, Sediment Sample Processing Recover BOD Bottles, Recover Sediment Traps, Sediment Coring, Oxygen Measurements, Sediment Sample Processing, Biogeochemistry & Sediment Cores, Fish & Fisheries, Marine Mammals, Fishing Swimming.

OCN 4110: DATA COLLECTION & ANALYSIS IN OCEANOGRAPHY (LAB)
CTD Cast, CTD Data Plotting, Bathymetry Mapping, Optical Measurements & Water Sampling, Secchi Disk & PAR Meter Data Analysis, Phytoplankton & Pigment Samples (Niskin Bottles), Plankton Net Tows, Deploy Sediment Traps, Plankton Microscopy, BOD, Pigment Analysis, Deploy BOD Bottles, Benthic Grabs, Sediment Coring, Sediment Sample Processing, Recover BOD Bottles, Recover Sediment Traps, Sediment Coring, Fish & Fisheries data collection, Satellite data collection and Analysis, Data analysis and visualization tools: Ferret, Matlab etc

OCN 4201: INTEGRATED COASTAL ZONE MANAGEMENT
Introduction and Concepts- Definitions of ICZM, Boundaries of the coastal zone, Multiple Uses of the Coastal Zone- Urban settlement, Industrial development, Coastal Zone Management Issues- Population growth, Resource exploitation, Tools and Techniques for ICZM- Administrative, Social, Technical, ICZM Planning Cycle.

OCN 4203: **COASTAL MORPHOLOGY AND PROCESSES**
Shores and shore process: Sea coasts and their origin, classification of sea coasts and shorelines; Depositional landforms and others processes of coastal land forms,

Geomorphology and evolution of the Bangladesh coasts, Beach configuration and stability, Sources of beach materials and their related factors, Sea level changes and their related coastal responses, Theory, types and nature of tides in the different coastal area of the world, Waves generation, types and their measurements, Wave energy density, wave energy flux, wave refraction, wave breaking and wave run-up, Rip currents, long shore currents and transport along the coast, Sediment cycles and movements in coastal waters.

OCN 4205: MARINE BIODIVERSITY AND CONSERVATION

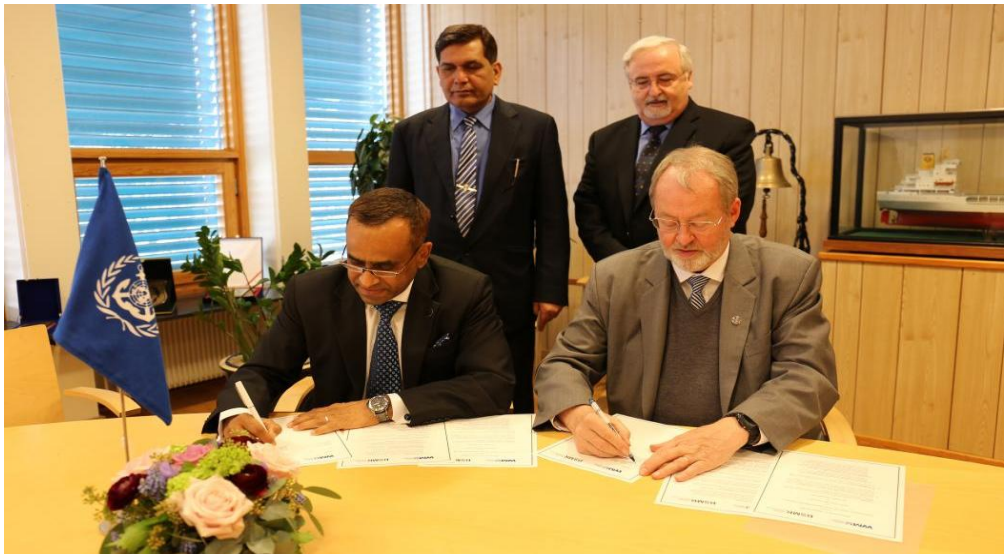
Biodiversity-Introduction, Measuring Biodiversity, Threats to Biodiversity, Extinctions, Extinctions of the Past, Human-caused extinctions, Causes of extinctions, Conservation-Definition and Concepts, Importance of Conservation, The Rise of Modern Conservation, Approaches of Conservation, Biodiversity conservation inside Protected Areas, Biodiversity conservation outside Protected Areas, International Agreements on Biodiversity Conservation.

OCN 4207: GLOBAL CLIMATE CHANGE

Introduction, History of Earth Climate, History & causes of Climate Change, Climate Cause & Prediction, Climate Consequences & Biosphere, Climate & Biosphere, Mitigation Strategies: Transportation, Electric Power & Other Sectors, Economics of Climate Change, Legalities of Climate Change, Culture & Climate Change, Ocean Climate Service.

OCN 4209: THESIS

The students will gain hands-on research experience through completing a research project, starting with hypothesis development, literature searching, experimental design, data collection, analysis, and interpretation. Students will also gain experience in written and oral communication by submitting several written components including research proposal, progress report, and final thesis as well as presenting the results of their research in a oral presentation.



Signing MoU with World Maritime University, Malmo, Sweden

Signing MoU with Western Sydney University, Australia

Signing MoU with Indian Maritime University

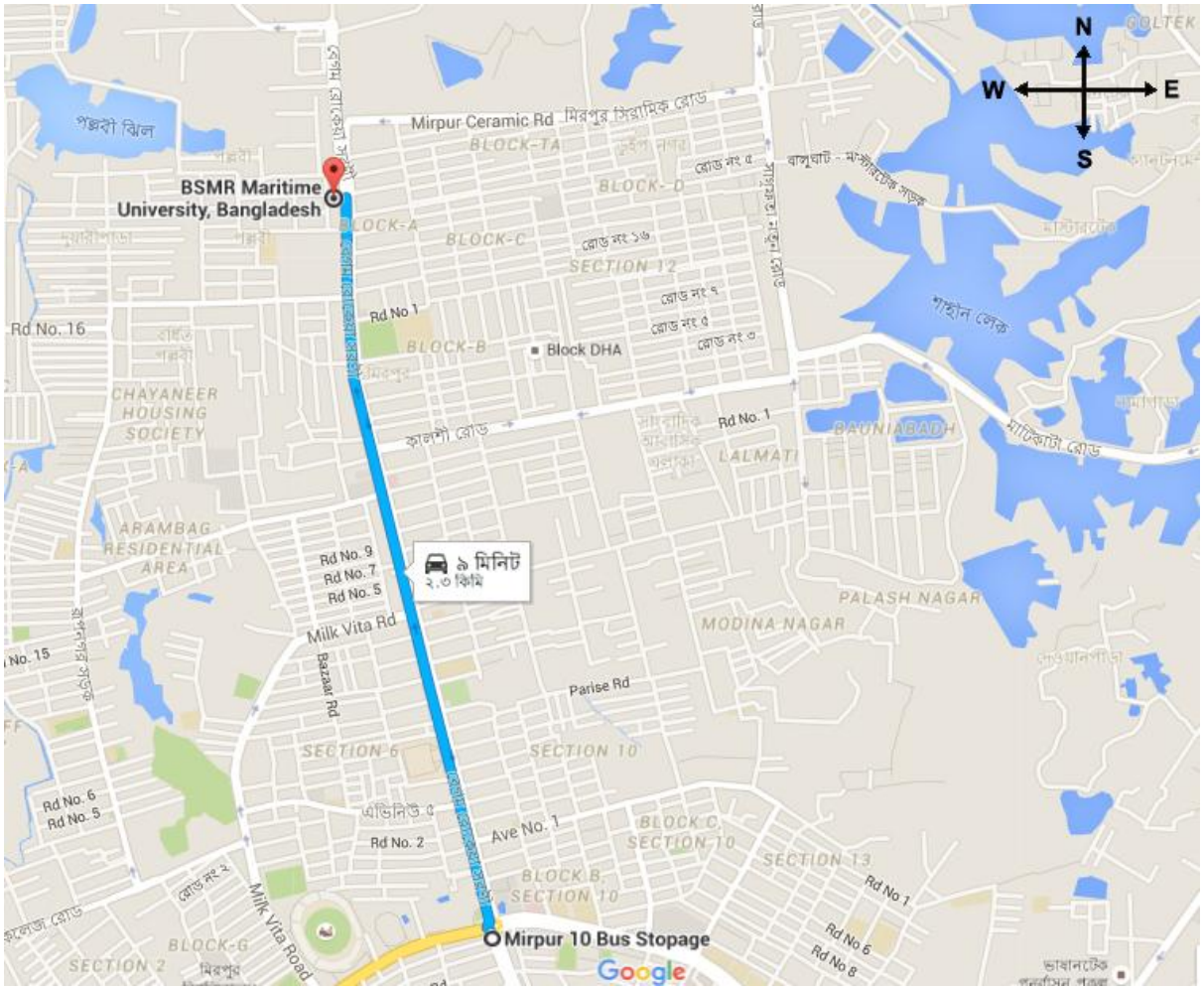
Senate Members of BSMRMU

Semester Final Examination

Industrial Visit to ICD (Inland Container Depot), Kamalpur, Dhaka

Officers of BSMRMU

9th Academic Council Meeting



Direction of BSMRMU Campus Location