AN INNOVATIVE MET APPROACH IN TURKEY – JOINT DUAL DIPLOMA & DUAL LICENSE UNDERGRADUATE PROGRAM

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SUMMARY -

The present urgent demand for seafaring officers throughout the globe is predicted to increase even more sharply in the next decade.

Similarly, shortage of QUALITY seafaring officers especially in the Engine Department is clearly observed in Turkish Merchant Fleet. This indicates that the capacity of the present MET Institutions of Turkey which are summarised in the paper, needs to be urgently increased.

In general;the monovalent,one step, 3/4 E Level,Degree MET Institutions in Turkey; annually recruit around 1500 cadets in total.Since all cadets do not opt for on board employment after graduation,and even if they do; since they move on to shore based employment within utmost 5 years time period, the problem of shortage of seafaring officers in Turkish Merchant Fleet needs an urgent solution in the most near future.

Thus; after detailed discussions with the Turkish Administration, and Turkish Shipowners; GALATASARAY and EUROPEAN UNIVERSITY of LEFKE concluded their preparations towards initiating the very first joint dual diploma, and dual license undergraduate program of Turkey in the 2007/2008 Academical Year to train and educate more QUALITY Seafaring Officers.

The unique, original curriculum designed specially for this program is presented in detail throughout the paper.

It is concluded that; the newly designed bivalent, one step, dual degree MET, at enrichment/elevation level granting 191.5 total credit hours REPLACES just as EFFICIENTLY and SUCCESSFULLY both of the two classical monovalent(deck and engine), one step, Degree MET programs of 161.5, and 165 credit hours respectively totalling to 326.5 credit hours.

Moreover, the newly designed MET program of Galatasaray and European University of Lefke is intended to contribute vastly towards decreasing the shortage of quality seafaring officers in Turkey, and TRNC as well as the rest of the globe.

The venue of this unique program of the world will also serve as an International Center of Experimentation at least for the next decade in terms of proving the efficiency and the success of bivalent, joint diploma undergraduate MET in comparison with classical monovalent MET undergraduate programs.

1. INTRODUCTION -

The worldwide demand for and supply of seafarers in the next decade is summarised from BIMCO/ISF Manpower 2005 Update (1) in TABLE 1 where it is clearly shown that the 10,000 urgent demand of seafaring officers in 2005 will increase to 21,000 in 2010,and to 27,000 in 2015.

The present 100 million tons of ocean borne cargo volume of the most dynamic LNG sector will increase to 200 million tons in 2010 with the present number of 157 LNG ships increasing to 345 by the end of 2008 including the ships on firm order. Thus , the urgent demand only for highly gualified LNG ship officers will be 5000 by the end of 2008 (2).

The top 13 countries meeting 65.6% of the expectations of the world for active seafarer of officer category in 2005 is shown in TABLE 2 where Turkey takes 5th place with 4% share in the general sum, in 2005. ⁽³⁾

Another interesting research report by Sampson et.al. ⁽⁴⁾ on the worldwide number of actively employed seafarers based on the number of seafarers employed at ships which dock at specially selected major international ports of the world is summarised in TABLE 3 where the number of active seafarers in the 30 countries which are known to provide the highest number of seafarers are indicated.

According to TABLE 3, 23,810 out of the total 631,267 actively working seafarers (officer/rating) worldwide are Turkish (10,765 senior officers, 6,226 junior officers, and 6,818 ratings), and this figure corresponds to 3.8% of the total number of active seafarers in the world,ranking Turkey 7th among the top 30 ⁽⁵⁾.

Recent national statistical reports $^{(6)}$, $^{(7)}$ on Turkish Seafaring Capacity show that the total number of registered certificates issued to officers which was 17,181 in 2002 has reached to 22,091 in 2005, and is expected to be 24,000 by the beginning of 2007. The number of identified officers employed at foreign flag ships has been recorded as 3,678 in 2005.

At present, Turkish Merchant Vessel Fleet has 806 vessels of 10,379 DWT. Including the 46 new ships of 1,117 DWT on firm order, it is shown⁽⁸⁾ that there is an urgent shortage of seafaring officers as well as new MET Institutions in Turkey.

2. TYPES AND CONCEPTS OF MET THROUGHOUT THE WORLD -

There are 164 countries in the world the administrations of which are Parties to IMO involved in

Maritime Education and Training. The latest IMO Compendium of Maritime Training Institutes ⁽⁹⁾ of the world provides general information, training facilities and the study programs and short courses about the 363 Maritime Education Institutes of the world from 86 countries which gives a fairly good idea about the rest of 78 countries with no information available yet.

This Compendium shows that in a number of countries MET for Oceangoing/Unlimited CoC are carried out at Universities/Faculties/Colleges/Academies of 4-5 years after High School. On the other hand, quite a few countries exercise this education at OND/HND/Junior College Level which is one or two years education after graduating from High School or having A Levels. Still, in a number of countries, this education is at High School level or through private courses after high school, or even at Junior High School since minimum standards defined by STCW 95 as amended permit this practise. Thus, the MET at University level is only a percentage of the total MET throughout the world.

A number of research work has been carried out to investigate the different levels and kinds of MET throughout the world such as $METHAR^{(10)}$, $METNET^{(11)}$, $GLOMET^{(12)}$ the results of which are summarised below.

A – Degree MET and NonDegree MET

Degree MET leads to the highest certificate of competancy and an academical degree (BSc,MSc or equivalent) where as Non Degree MET leads to a Certificate of Competancy (CoC) only.

B – Monovalent, Bivalent, and SemiBivalent MET

Monovalent MET leads to an unlimited CoC either in Deck or in Engine capacity. Bivalent (dual purpose) MET leads to an unlimited CoC in both Deck and the Engine capacity. SemiBivalent MET leads to a CoC on the Operational Level (OOW Level) in both the Deck and Engine capacity,but continues with seperate programs for a Nautical or a Marine Engineer CoC at the Management Level.

C – One Step and Two Step MET

In one step MET, the syllabi for the Operational and Management Level of STCW as well as for the Academical Degree are covered during a single period at an MET Institution. In two step MET, the syllabus for the Operational Level and the syllabus for the Management Level are seperated by a seafaring period and the cadet normally returns after having completed the first step and the required sea time – with an OOW – CoC to the MET Institution for the second step,Management Level.

D - 4E MET

The four E stands for

Essentials, Extensions, Enrichment, and the Elevation.

Essentials – are syllabi meeting the minimum requirements of STCW 95 as amended.(Private Courses)

Extensions –are more detailed and more comprehensive shipboard confined syllabi than required by STCW. Extension subjects can, but need not be STCW related. (Junior Colleges)

Enrichments –is the part of the syllabi that is necessary for meeting academic requirement for a BSc or equivalent Degree and prepares ship officer students for later on shore employment. (Colleges)

Elevations – Syllabi meeting the requirements of MSc/PhD or equivalent Degree.

3. MET INSTITUTIONS IN TURKEY -

In Turkey, there are three different levels/types of MET⁽¹³⁾, (14), (15).

High School graduates after 11/12 years of basic education, at the age of 17/18 take the annual general entrance examination for Universities in Turkey to be placed in one of the MET University Institutions. Approximately 1.5 million high school graduates take this exam, and one has to be nearly in the top 10% to be placed in one of the MET University Institutions in Turkey. Thus, all students of Maritime Universities in Turkey are of top quality. Students with more moderate scores are placed in Junior Colleges or Private MET Institutions.

A - UNIVERSITY (FACULTY/COLLEGE) 4/5 YEAR MET INSTITUTIONS

Istanbul Technical University, Maritime Faculty (ITUMF)

ITUMF is situated at Tuzla Suburb of Istanbul.Annual intake of cadets for Deck,and Engine Departments are 145,and 85 respectively including the SUNYMC dual diploma,joint degree program. It is a monovalent,one step,3/4E Level Degree MET where language of instruction is partly in English.Graduates earn the Marine Engineering/Maritime Transportation & Administration Engineering Degrees from Higher Education Council of Turkey through ITU (one of the top 3 universities of Turkey among a total of 82),and CoC's from the Undersecretariat of Maritime Affairs after licensing exams.

Dokuz Eylül University, School of Maritime Business and Management

This College is situated in Izmir.Annual intake of cadets for Deck and Engine Departments are 50, and 15 respectively. Language of instruction is in English.Standards are excellent and are very similar to ITUMF.

Karadeniz Technical University, Faculty of Maritime Sciences

This Faculty is situated in SURMENE Town of TRABZON. Annual intake of cadets for Deck Department is 50. Language of instruction is in Turkish. Standards are very similar to ITUMF, and Izmir.

In all above 3 MET University Institutions, both operational and management level of MET studies are covered in 4/5 years.

B – PRIVATE MET INSTITUTIONS (3 YEARS) –

MET CENTER OF TURKISH CHAMBER OF SHIPPING (TUDEV)

Turkish Maritime Education Foundation is situated in Tuzla Suburb of Istanbul, and is a non degree, private, MET institution at operational level leading to unlimited licenses both in Deck and Engine Departments. High School graduates are recruited, and following one year of English Language instruction, 3 years of MET is required. TUDEV cooperates with Northumbria University, South Tyneside College, Strathclyde University, Glasgow Colleges in UK, and Tromso University College in Norway. Graduates of TUDEV successfully completing BTEC programs in UK can sit for UK license exams by MCA. The programs are also approved by IMarEST.The annual total intake of TUDEV in 2006 is 400 cadets (engine&deck).

The total annual intake of other private MET Institutions like AKADEMI, EKOL mainly situated in Istanbul are approximately 200, and lead to unlimited oceangoing licenses at operational level. Standards satisfy the minimum STCW requirements.

C – UNIVERSITY (JUNIOR COLLEGE) 2 YEAR MET INSTITUTIONS –

Istanbul Technical University, Junior Maritime College

Annually recruits 60 Deck,and 60 Engine Students. Operational level of MET leads to limited oceangoing licensing after 2 years of study at ITU Junior College following High School.Standards satisfy the minimum STCW requirements with only support provided from ITUMF.

Kocaeli University, Karamürsel Junior Maritime College

Annually recruits 100 Deck, and 100 Engine students. Operational Level of MET leads to limited oceangoing licensing after 2 years of studies following high school. Standards satisfy minimum STCW requiremements with facility, instructor support from other sources.

Uludag University, Yalova Junior Maritime College

Annually recruits 50 Deck students. Operational level of MET standards leads to limited oceangoing licensing after 2 years of studies following High School. Standards satisfy minimum STCW requirements with facility,instructor support from other sources.

Mersin Junior Maritime College

Annual intake is around 50 cadets for licensing departments.Carries out similar level of education like Kocaeli,Uludag Junior Colleges.Facilities are better than in ITU,Kocaeli,and Uludag University Junior Colleges.

Galatasaray University, Junior Maritime College

Annual intake is 50 Deck,and 50 Engine cadets. Situated at the premises of Ziya Kalkavan Maritime Anatolian High School with excellent facilities next to Galatasaray University Campus on

the European Side of Istanbul, along the Bhosphorus. Licensing is similar to other Junior Colleges.

Thus one can easily calculate that the total intake of cadets for all levels of MET in Turkey is 1465 per year; 955 Deck and 510 Engine cadets. Assuming that all cadets do not opt for on board employment after graduation, and even if they do, they move to shore based employment within 5 years time, there is a shortage of Seafaring officers in Turkish Merchant Fleet, especially in Engine Department.

4. GALATASARAY & EUROPEAN UNIVERSITY OF LEFKE JOINT DUAL DIPLOMA & DUAL LICENSE UNDERGRADUATE MET PROGRAM –

A – GALATASARAY UNIVERSITY –

Galatasaray University Campus is situated on the European Side of Istanbul, along the shores of Bhosphorus. Galatasaray University boasts a heritage dating back more than 500 years. Her history began with the construction of the Palace School of the Ottoman Empire on the hills of Galata in 1481.

Galatasaray University bears the distinction of being the very first University founded by International Agreement between France and Turkey in 1992. Although neither a private nor Foundation University, and functioning under Turkish Higher Education regulations, she differs from all other universities through the unique nature of her establishment. Since 1993, protocols for the university's cooperation with 38 French Higher education Institutions have been signed. This cooperation is implemented through exchanges of both students and teaching staff. The University has Faculties of Law, Economics and Administrative Sciences, Communication, Science and Letters, and Faculty of Engineering & Technology. Aditionally, a Social Sciences Institute, and an Institute of Sciences offering PostGraduate programs leading to Masters and Doctoral Degrees are attached to the Office of the Rector. The European Research and Documentation Center and the Strategic Research Center are also attached to the same Office. (www.gsu.edu.tr)

B – EUROPEAN UNIVERSITY OF LEFKE –

The Europen University of Lefke (EUL) is situated in the town of Lefke, in the Turkish Republic of Northern Cyprus(TRNC). The EUL is a non profit university founded in 1990 by the Cyprus Science Foundation.EUL provides a broad ranging contemporary education and is committed to maintaining and developing international standards of excellence in co operation with well known universities around the world.

EUL currently has more than 3000 students from 30 different countries in her 20 undergraduate,6 Masters Degree,and 6 Associate Programs. The language of instruction at EUL is in English. EUL is fully accredited by the Higher Education Council of Turkey and relevant Bodies in many other countries.

The 4 year undergraduate programs at EUL are Faculty of Architecture and Engineering (Architecture, Interior Architecture, Civil Engineering, Electrical & Electronic Engineering, Computer Engineering), Faculty of Arts and Sciences (English Language Teaching, Turkish Language and Literature, History), Faculty of Economics and Administrative Sciences (Business, Economics, Banking and Finance, Computer Information Systems, International Relations, Public Administration), Faculty of Communication Sciences (Journalism, Radio-TV-Cinema, Public Relations and Advertisement, Visual Communication Design).

The Postgraduate Programs at EUL are Business (MBA), International Relations (MA), English Language (MA), Architecture (MA), Civil Engineering (MSc), Electrical and Electronic Engineering (MSc), Computer Engineering (MSc).

The 2 year ssociate Programs at EUL are Computer Programming, Construction Technology, Management, Public Relations & Publicity, Visual Communication and TV Production & Direction. (www.lefke.edu.tr)

C - JOINT DUAL DIPLOMA & DUAL LICENSE UNDERGRADUATE MET PROGRAM –

Considering the urgent shortage of Seafaring Officers in Turkey, after detailed discussions with the Chamber of Shipping of Turkey, Undersecretariat of Maritime Affairs in Turkey, and the Ministry of Transportation in TRNC; Galatasaray and European University of Lefke concluded their preparations towards initiating THE VERY FIRST

Joint dual diploma & dual license undergraduate program of Turkey in the 2007/2008 Academical Year, asssuming that related bureaucracy will be finalised in ample time.

The Program is designed to be completed in 5 years after High School. The first year is allocated for English Language instruction. The Program is intended to be carried out in a Regimental system; cadets, both mail and female, wearing uniforms. The EUL Campus in Lefke will host the Freshman and Sophmore Years of the Program where as Galatasaray University Campus will be hosting the Junior and Senior Years of the Program. The Graduates of the Program will receive NAUTICAL & MARINE ENGINEERING Undergraduate Diplomas from both Universities and will sit for both Unlimited Deck & Engine CoC License exams at the Administration after completing their 4 years MET at both Operational & Management Level.

Thus, this very first, and original program ever designed in Turkey ; in terms of International MET Terminology can be summarised as

BIVALENT ,ONE STEP , DUAL DEGREE MET, AT ENRICHMENT/ ELEVATION LEVEL

Bivalent MET is successfully carried out in all 4 MET Universities of France, William Barentz University of Holland, and MET Universities of Denmark, India, and Philippines in individual universities. The program described in the paper is the very first application of Bivalent MET through a dual degree program at any International MET Platform throughout the world.

Detailed Research work is carried out to design the program starting with a careful study of the IMO STCW 95 as amended, Chapters II, and III. $(^{16})$. IMO Model Courses 7.01 – 7.04 are also carefully studied going through all FUNCTIONS and COMPETENCIES both in Deck and Engine Department at Operational and Management Level $(^{17})$.

The Undergraduate Bivalent MET Programs of ENMM in Marseilles – France (18), and

WILLIAM BARENTZ in Holland ⁽¹⁹⁾ is most carefully analysed. The Directives of

Undersecretariat of Maritime Affairs (Administration) of Turkey on MET ⁽²⁰⁾ is also considered in extreme detail. The Monovalent, one step, degree MET programs of both Deck and Engine Departments of ITUMF, İzmir and Trabzon Universities are carefully studied. The 161.5 Credits/8 semester Deck and 165 Credits/8 semester Engine Department Undergraduate Programs of ITUMF are taken as a starting point of reference.

Eventually, the original bivalent, one step MET undergraduate program at enrichment/elevation level is designed for Galatasaray – EUL Universities joint dual diploma program with a total of 191.5 credits in 8 semesters is shown in TABLE 4 taking into consideration the following very important boundary conditions.

- a) All of the Basic Sciences and Basic Engineering Courses mainly in the first three semesters are common to both departments.
- b) There are also a number of other common courses for both departments in following semesters such as Maritime English, Turkish, History of the Turkish Revolution, Maritime Law etc..
- c) A number of noncredit courses within the Deck & Engine Programs such as Maritime Safety Courses (swimming,fire fighting,survival at sea,utilisation of survival craft,first aid),Maritime Ethics,Physical Education are taken out of the weekly program to be implemented at the weekends in the form of IMO certificate courses.This saves almost one whole semester for the bivalent program.
- d) The number of credit hours per semester is increased to 24 credits where as this number was limited to 20 22 credits per semester in the monovalent deck and engine programs.
- e) Utilising the state of the art teaching methods and facilities, it is proved that some competencies can be transferred to the cadet in terms of lectures in a shorter period of time compared with classical methods of teaching. For example; Thermodynamics I, and Thermodynamics II totalling to 5 hours in two semesters can be thought just as efficiently combining the two courses as Thermodynamics in 4 hours lecture time.
- f) A large percentage of the tuition hours of Deck and Engine Department Courses are kept unchanged .
- g) The duration of Simulator Application Courses such as MARITIME PRACTICAL STUDIES is arranged in line with number of students taking the course. For example;a course of total 18 hours for nearly 180 students at the monovalent programs of ITUMF is reduced to 12 hours for the 72 cadets of the newly designed bivalent program.
- h) Total 18 months of on board training of Deck(12 months) and Engine(6 months) Monovalent program is reduced to a total of 12 MONTHS for the newly designed Bivalent program as approved by IMO at ENMM of Marseilles France, and WILLIAM BARENTZ of Holland.

D – OTHER DETAILS OF THE NEWLY DESIGNED BIVALENT PROGRAM

It is most difficult to find to employ Professors with seafaring background at the University level in Turkey. Even in most established MET Institutions in Turkey like ITUMF there is a shortage of Professors with seafaring background unlike other classical disciplines. Professor O.K.SAG ; the Founding Chair of IAMU, the past Chair of IMO STW Committee has solved this problem of academician shortage for the newly designed program through a system of VISITING PROFESSORSHIP from abroad as a solution at the initial stages till young generation of Turkish Academicians with seafaring background are trained as trainers.

EUL financially supported by the Cyprus Science Foundation, the Government of TRNC, and the Turkish Chamber of Shipping will not face the financial difficulties of the classical Turkish Government MET Institutions with limited, symbolic insufficient budgets. Thus, within two years time during which cadets will go through English Language

Training, and Basic Science/Engineering Course tuition;, the laboratories, simulator facilities of the newly designed program will be completed at highest standards. Galatasaray University, carrying out an MET course at Junior College level already has excellent facilities and sufficient teaching staff.

The program is intended to start with three parallel classes of 24 cadets each(IMO Standards) totalling to an annual intake of 72 cadets per annum.

The Program is also in the process of starting Postgraduate Courses in MET yielding to young, new Academicians with PhD's. The program also intends to carry out CONTINUING STUDIES/ REFRESHMENT COURSES for the existing seafarers in the Sector. The program is going through a number of negotiations with a number of International Shipping Companies for future joint cooperation serving them as their RECRUITMENT OFFICES/CREW MANAGEMENT COMPANIES in this part of the world training TOP CLASS SEAFARING BIVALENT OFFICERS even at this initial stage of the program.

The newly designed program is also in the process of being supported by a number of INTERNATIONAL PROJECTS of the Shipping Sector of the world.

5 – CONCLUSION

The newly designed bivalent, one step, dual degree MET, at enrichment/elevation level of 4 years (8 semesters of 14 weeks each) granting 191.5 total credits REPLACES just as EFFICIENTLY and SUCCESSFULLY both of the two seperate monovalent (Deck & Engine), one step, Degree MET programs at enrichment/elevation level of 161.5 and 165 Credits respectively totalling to 326.5 Credits.

Moreover; the newly designed, original BIVALENT, ONE STEP, DUAL DEGREE MET, JOINT UNDERGRADUATE programs of Galatasaray University, and European University of Lefke will contribute vastly towards decreasing the shortage of QUALITY seafaring officers in Turkey, and TRNC as well as the rest of the world.

The venue of this unique program of the world will also serve as an International Center of Experimentation at least in the next decade in terms of proving the efficiency and success of Bivalent, joint diploma undergraduate MET in comparison with classical monovalent MET undergraduate programs.

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7. NOMENCLATURE

BIMCO ISF LNG	 The Baltic and International Maritime Council International Shipping Federation Ltd. Liquid Natural Gas Doad Weight Tops
MET	- Dead Weight Tons Maritime Education and Training
	- Certificate of Competancy
IMO	- International Maritime Organisation
	- Ordinary National Diploma
HND	- Higher National Diploma
STCW	- Standards of Training, Certification, and Watchkeeping
OOW	- Officer of the Watch
BSc	- Bachelor of Science
MSc	- Master of Science
ITUMF	 Istanbul Technical University, Maritime Faculty
SUNYMC	 State University of New York, Maritime College
TUDEV	 Turkish Maritime Education Foundation
BTEC	 Business and Technology Education Council
MCA	- Maritime and Coast Guard Agency of United Kingdom
IMarEST	- The Institute of Marine Engineering, Science and Technology
ITU	- Istanbul Technical University
EUL	- European University of Lefke
TRNC	- Turkish Republic of Northern Cyprus
METNET	- MET Network
METHAR	- Harmonisation of MET
GLOMET	- Globalisation of MET

ENMM - Ecole de la marine marchande

8. LIST OF REFERENCES -

1. BIMCO/ISF Manpower 2005 Update The Worldwide demand for and supply of seafarers - Main Report Warwick Institute for Employment Research December 2005 2. IAMU LNG Initiative The 5th Annual General Assembly, Australian Maritime College Launceston, Tasmania, Australia October 2004 3 SAG,O.K. Expectations of the world from Turkey on Seafarer Supply **Turkish Shipping World** December 2005 4. SAMPSON.H. Powerful Unions, Vulnarable Workers; the representation of seafarers in the global labour market SIRC, Cardiff University October 2003 5. SAG,O.K. Seafarer Demand/Supply Balance **Turkish Shipping World** October 2005 6. Prime Ministry Undersecretariat of Maritime Affairs of Turkey Seafaring Capacity Research Results October 2004 7. SAG.O.K. Istanbul Technical University, Maritime Faculty **JICA Project Research Results** April 2005 8. SAG,O.K. European University of Lefke Higher Education Council Maritime Faculty Application File February,2007 9. IMO Compendium of Maritime Training Institutes Second Edition.2000. IMO. London.UK. 10. KAPS, H. Gaus Bremen. METNET-EU 5th Framework programme Competitive and sustainable growth design of common syllabi/curricula for Nautical MET October 2002 11. PRASAD, R. WMU- Malmö /Sweden. METNET – EU 5th Framework Programme Competitive and sustainable growth design of common syllabi/curricula for Marine Engineering September 2002 12. ZADE et.al. GLOMET IAMU Working Group 1 Project

Global Survey of the Education and Training of Seafarers May 2003.communications 13. SAG.O.K. Merchant Maritime Education in Turkey and ITUMF in accordance with STCW 95 as amended. IMO - STW 30 Sub Committee Meeting January 1999, London UK. 14. SAG,O.K. Differences between Maritime Universities and Other Universities International Maritime University Presidents Forum Dalian,China August 2003 15. SAG,O.K. In the Verge of February 1,2004 at IMO - ITUMF Self Study Report Format, A proposal as a general IAMU format IAMU News No 10, January 2004 16. STCW 95 International Maritime Organisation London 1996 17. Model Courses 7.01 - 7.04 International Maritime Organisation Revised Edition, 1999.

- SAG,O.K. Private Communications with ENMM,Marseilles France December 2006
- SAG,O.K. Private Communications with WILLIAM BARENTZ,Holland December 2006
- Directives of Undersecretariat of Maritime Affairs, Prime Ministry of Turkey on MET and assessment August 2001

TABLE – 1

SUPPLY / DEMAND BALANCE OF SEAFARING OFFICERS IN THE WORLD $\times (10^4)$

	2005	2010	2015
SUPPLY	466	467	472
DEMAND	476	488	499
DIFFERENCE	-10	-21	-27

TABLE – 2

ACTIVE SEAFARING OFFICERS IN THE WORLD

	2005			2010			2015	
1	PHILIPPINES	97842	1	1 PHILIPPINES 1		1	PHILIPPINES	106682
2	INDIA	46497	2	INDIA	51392	2	INDIA	56801
3	CHINA	42704	3	CHINA	44591	3	CHINA	46562
4	UKRAINE	28908	4	UKRAINE	28956	4	UKRAINE	28908
5	TURKEY	22091	5	RUSSIA	21680	5	RUSSIA	21680
6	RUSSIA	21680	6	TURKEY	19310	6	POLAND	19000
7	POLAND	19000	7	POLAND	19000	7	INDONESIA	16900
8	GREECE	17000	8	INDONESIA	16185	8	TURKEY	16879
9	INDONESIA	15500	9	GREECE	14860	9	CROATIA	13010
10	UK	14050	10	CROATIA	13000	10	GREECE	12989
11	CROATIA	13000	11	UK	12281	11	VIETNAM	11453
12	JAPAN	12968	12	VIETNAM	10968	12	UK	10735
13	VIETNAM	10504				13	BRASIL	10554
						14	TAIWAN	10203

TABLE 3 – ACTIVE SEAFARING OFFICERS / RATINGS IN THE WORLD

Country	Senior	Junior	Ratings
e e unit, j	Officers	Officers	
1.Philippines	19800	40636	81263
2.Ukraine	19857	16038	9712
3.Russia	21527	15476	7098
4.Indonesia	10239	10297	23056
5.China	7150	9606	15623
6.India	7365	9799	9171
7.TURKEY	10765	6226	6818
8.Poland	10267	5531	4259
9.Greece	9551	4326	2075
10.Myanmar	1633	3913	6973
11.Romania	4974	4453	2029
12.Bulgaria	3529	3465	3861
13.Latvia	3292	3101	2753
14.Croatia	4169	2452	1371
15.South	3627	2239	1563
Korea	1024	1472	3346
16.Malaysia	3746	1337	208
17.Holland	4185	442	258
18. Germany	2147	1399	1329
19. Italy	3537	1020	206
20. Norway	3027	1472	66
21. UK	2489	1201	101
22. Denmark	1317	1163	991
23. USA	1382	1145	656
24. Pakistan	1535	858	700
25. Spain	1364	373	132
26. Japan	267	405	800
27. Sri Lanka			

(Sampson et.al.)

28. Honduras	141	54	544
29. Canada	341	360	38
30. Finland	421	168	32

TABLE - 4

GALATASARAY and LEFKE EUROPEAN UNIVERSITY MARITIME FACULTIES JOINT DUAL DIPLOMA, DUAL LICENSE UNDERGRADUATE CURRICULUM

FRESHMAN YEAR First Term

FRESHMAN YEAR Second Term

Course Title Hours	Credit		Course Title Hours	Credit
MATHEMATICS - I	4		MATHEMATICS – II	4
PHYSICS – I	3		PHYSICS – II	4
COMPUTER PROGRAMMING – I	2		COMPUTER PROGRAMMING – II	2
TECHNICAL DRAWING - I	2		TECHNICAL DRAWING – II	1
MARITIME CHEMISTRY	2		MECHANICS	3
INTRODUCTION TO MARINE ENGINES		2	MANUFACTURING METHODS	2,5
INTRODUCTION TO NAVIGATION	4		TRESTIAL & CELESTIAL NAVIGATION	6
MECHANICAL WORKSHOP	2		MARITIME ENGLISH – I	1,5
SEAMANSHIP	3		PHYSICAL EDUCATION	0
MARITIME SAFETY – I (NON CREDIT CERTIFICATE COURSE)	0		MARITIME ETHICS	0
TOTAL	24		TOTAL	24

SOPHMORE YEAR First Term

SOPHMORE YEAR Second Term

Course Title Hours	Credit	Course Title Hours	Credit
DIFFERENTIAL EQUATIONS	4	LINEAR ALGEBRA	4
MARINE ELECTRONICS & ELECTROTECHNICS	4	MARINE DIESEL ENGINES OPERATION MAINTENANCE – I	& 2,5
NAVAL ARCHITECTURE	3	STRENGTH OF MATERIALS	2
THERMODYNAMICS	3	MARINE AUXILIARY ENGINES – I	2,5
MARITIME ENGLISH – II	3	ELECTRONICAL NAVIGATION	3
TURKISH	2	SHIP MANOEUVRING / HANDLING	2,5
MARINE MATERIAL SCIENCE	2	MARINE COMMUNICATION	2
WATCHKEEPING	2	MARITIME LAW	4
		MARITIME ENGLISH – III	1,5
MARITIME SAFETY - II	0	MARITIME SAFETY – III	0

(NON CREDIT CERTIFICATE COURSE)		(NON CREDIT CERTIFICATE COURSE)		
TOTAL	24	TOTAL	24	

JUNIOR YEAR First Term

JUNIOR YEAR Second Term

Course Title Hours	Credit	Course Title Hours	Credit
MARINE ENGINES OPERATION & MAINTENANCE – I	2,5	ON BOARD TRAINING	24
MACHINERY ELEMENTS	2		
AUTOMATIC CONTROL SYSTEMS	2,5		
HEAT TRANSFER	2		
FLUID MECHANICS	2		
CARGO HANDLING STOWAGE & STABILITY – I	3		
MARITIME METEOROLOGY	2,5		
MARITIME PRACTICAL STUDIES	6		
MARITIME ENGLISH – IV	2		
INTERNATIONAL MARITIME RULES & REGULATIONS	0		
MARITIME MANAGEMENT	0		
QUALITY & SAFETY MANAGEMENT SYSTEMS	0		
TOTAL	24,5		

SENIOR YEAR First Term

SENIOR YEAR Second Term

Course Title Hours	Credit		Course Title Hours	Credit	
PROPELLOR & SHAFTING SYSTEMS	3		HYDRAULIC & PNEUMATIC CONTROL	2	
STEAM & GAS TURBINES	2,5		OF SYSTEMS		
MARINE ENGINES OPERATION &		3	SURVEY PROCEDURES		2
MAINTENANCE – II		-	SHIP MANAGEMENT	6	
MARINE AUXILIARY ENGINES – II	2,5		PERSONNEL MANAGEMENT	2	
REFRIGERATION & HVAC SYSTEMS	2		MARITIME ENGLISH – V	3	
MARINE DIESEL ENGINES OPERATION	& 3		TRANSPORTATION SYSTEMS	2	
MAINTENANCE - II			DESIGN OF MARINE DIESEL ENGINES		2
CARGO HANDLING STOWAGE & STABILITY – II	3		FINAL YEAR PROJECT	3	
HISTORY OF THE TURKISH REVOLUTION	ON 2		ELECTIVE COURSE	2	

ELECTIVE COURSE	2		
TOTAL	23	TOTAL	24