RUKOVANJE TERETOM 1

Nautički smjer – dodiplomski studij, semestar 3

NAČIN POLAGANJA ISPITA I OCJENJIVANJE

Način polaganja ispita za rednovne i izvanredne studente: dva kolokvija (minimum ~55% po kolokviju) i usmeni (završni) ispit.

Student koji je zadovoljio na kolokvijima izlazi na usmeni ispit u ispitnim terminima po završetku nastave u zimskom semestru.

REDOVNI STUDENTI

Redovni studenti pišu oba kolokvija tijekom nastave i to prvi kolokvij sredinom mjeseca studenog a drugi kolokvij početkom siječnja. Tijekom nastave, krajem siječnja pišu se ponovljeni kolokviji (oba skupa unutar jednog pismenog ispita).

Redovni studenti koji nisu zadovoljili (ili pristupili) na kolokvijima niti nakon drugog pokušaja mogu pristupiti trećem pokušaju pisanja kolokvija u jednom od ispitnih termina po završetku nastave u zimskom semestru.

Redovni studenti koji nisu zadovoljili na kolokvijima niti nakon trećeg pokušaja, da bi stekli uvjet za četvrti i posljednji pokušaj pisanja kolokvija dužni su napisati seminarski rad iz odabrane teme u dogovoru s predmetnim nastavnikom.

IZVANREDNI STUDENTI

Izvanredni studenti mogu pristupiti pisanju kolokvija u istim terminima kroz nastavu skupa s redovnim studentima. U tom slučaju vrijede ista pravila kao za redovne studente (piše se kolokvij jedan po jedan).

Izvanredni studenti mogu pristupiti pisanju kolokvija u terminima izvan nastave kada pišu oba kolokvija skupa unutar jednog pismenog ispita.

Bodovanje i ocjenjivanje uspjeha za sve studente prikazano je u naredne dvije tablice.

Bodovanje:				
	Kolok.1 max.	Kolok.2 max.	Zalaganje na nastavi redovni studenti	Završni ispit max.
Prvi pokušaj	35%	35%	Zalaganje = 0% Opomena 1 = –5% Opomena 2 = –15% Opomena 3 = –30%	30%
Drugi i svaki sljedeći pukušaj	30%	30%		

Završni uspjeh		
%	**Slovo**	**broj**
0	F	1
30	FX	1
40	E	2
50	D	2
60	C	3
70	B	4
80	A	5

ZADACI ZA VJEŽBU

Osnovni podaci za M/V "Sirius", Flag: Cipar, Net tonnage: 15597, Year built: 2011

Daily consumtion - fuel: 27MT, diesel: 1.8MT, water: 8MT

	DISPLACEMENT	DEADWEIGHT	DRAFT	FREEBOARD
*WINTER	52195 m/t	43230 m/t	11.466 m	4.559 m
SUMMER	53406 m/t	44441 m/t	11.710 m	4.315 m
*TROPICAL	54625 m/t	45660 m/t	11.954 m	4.071 m
FRESH WATER ALLOWANCE	26.86 cm	TPI/TPC (AT SUMMER DRAFT)		

Light ship: 8965MT

Constant: about 350MT

Draft marks from perpendikular: fwd: 2.76m, aft: -8.68m, mid: 0

TANK	TYPE	CAPAC. CBM	V.C.G.	L.C.G.	F.S. MOM
FP	BALL	1652.5	8.589	183.272	542
DB1P/S	BALL	787.28	5.44	168.095	255.2
DB2P/S	BALL	1393.36	6.63	150.78	823
DB3P/S	BALL	3248.12	7.52	122.501	2277.4
DB6P/S	BALL	2298.10	8.852	67.566	1973.8
DB7P/S	BALL	1415.27	8.177	41.826	1113.2
HOLD 3	BALL	8116.79	8.94	130.036	4597.3
HOLD 5	BALL	8116.79	8.94	82.336	4597.3
FW P/S	FW	207.5	14.845	5.449	447.4
AP	FW	280.81	11.757	2.376	2105.2
STER.TU	FW	72.14	9.463	5.159	499.8
FO4P/S	FO	1031.8	1.543	101.408	5095
FO5P/S	FO	1256.12	1.543	81.135	6202
SERV.10	FO	56.97	14.589	23.53	69.2
SETL.11	FO	60.7	14.564	27.481	77
OV.FLOW	FO	36.7	1.421	11.785	37.8
DO22P/S	DO	339.63	1.504	25.628	545.1
DO12/13	DO	23.52	14.85	19.928	3.9
GO 26	GO	49.22	15.159	1.065	40.9
LO	LO	146	14.9	18.72	67.3
CONSTANTS			12	87.5	
LIGHT SHIP			10.555	83.62	

HOLD	TYPE	CAPAC. CBM	V.C.G	L.C.G.
1	CARGO	5285.56	9.64985	168.656
2	CARGO	7096.04	9.19190	150.614
3	CARGO	8466.38	8.92474	130.036
4	CARGO	9733.73	9.19345	106.186
5	CARGO	8466.38	9.12342	82.336
6	CARGO	7198.98	8.61014	61.666
7	CARGO	7990.04	8.27301	41.337

M/V "Sirius" Hidrostatske tablice

Dft	Displ.	TPC	MCTC	LCB	LCF	KM
2.5	10398.00	44.1	453.79	100.613	100.664	26.844
2.6	10840.00	44.2	455.95	100.614	100.662	25.892
2.7	11281.00	44.3	458.03	100.614	100.661	24.993
2.8	11723.00	44.4	460.03	100.614	100.659	24.144
2.9	12165.00	44.4	461.96	100.613	100.657	23.346
3.0	12607.00	44.5	463.82	100.612	100.655	22.599
3.1	13055.00	44.6	465.5	100.61	100.637	22.019
3.2	13504.00	44.7	467.11	100.607	100.61	21.49
3.3	13954.00	44.7	468.66	100.603	100.591	20.981
3.4	14404.00	44.8	470.17	100.6	100.566	20.492
3.5	14854.00	44.9	471.64	100.597	100.541	20.022
3.6	15303.00	44.9	473.05	100.593	100.515	19.573
3.7	15753.00	45.0	474.41	100.59	100.489	19.143
3.8	16203.00	45.1	475.73	100.586	100.461	18.733
3.9	16652.00	45.1	477	100.582	100.433	18.343
4.0	17102.00	45.2	478.22	100.578	100.404	17.973
4.1	17556.00	45.2	479.36	100.572	100.379	17.659
4.2	18011.00	45.3	480.45	100.566	100.353	17.365
4.3	18467.00	45.3	481.5	100.559	100.325	17.081
4.4	18922.00	45.4	482.51	100.552	100.295	16.807
4.5	19377.00	45.4	483.48	100.544	100.263	16.542
4.6	19832.00	45.5	484.41	100.536	100.229	16.288
4.7	20287.00	45.5	485.31	100.527	100.193	16.044
4.8	20743.00	45.6	486.17	100.518	100.155	15.81
4.9	21198.00	45.6	486.99	100.508	100.115	15.585
5.0	21653.00	45.6	487.77	100.498	100.074	15.371
5.1	22111.00	45.7	488.36	100.488	100.029	15.18
5.2	22570.00	45.7	488.92	100.476	99.982	14.999
5.3	23029.00	45.7	489.48	100.465	99.933	14.825
5.4	23488.00	45.7	490.03	100.453	99.883	14.657
5.5	23947.00	45.8	490.6	100.44	99.831	14.495
5.6	24406.00	45.8	491.16	100.427	99.777	14.339
5.7	24865.00	45.8	491.72	100.413	99.722	14.189
5.8	25323.00	45.9	492.29	100.399	99.665	14.045
5.9	25782.00	45.9	492.86	100.384	99.607	13.908
6.0	26241.00	45.9	493.43	100.369	99.546	13.777
6.1	26702.00	45.9	493.94	100.353	99.483	13.66
6.2	27164.00	46.0	494.45	100.337	99.418	13.55
6.3	27625.00	46.0	494.98	100.32	99.352	13.444
6.4	28087.00	46.0	495.52	100.303	99.284	13.341
6.5	28549.00	46.1	496.08	100.285	99.215	13.242
6.6	29010.00	46.1	496.66	100.267	99.145	13.147
6.7	29472.00	46.1	497.26	100.248	99.074	13.056
6.8	29933.00	46.1	497.88	100.229	99.001	12.968
6.9	30395.00	46.2	498.53	100.209	98.927	12.885
7.0	30857.00	46.2	499.2	100.188	98.851	12.805
7.1	31321.00	46.2	500.19	100.168	98.788	12.732
7.2	31786.00	46.3	501.27	100.147	98.724	12.663
7.3	32251.00	46.3	502.38	100.125	98.655	12.597
7.4	32716.00	46.3	503.52	100.103	98.581	12.534
7.5	33181.00	46.4	504.7	100.08	98.501	12.474
7.6	33647.00	46.4	505.92	100.057	98.417	12.416
7.7	34112.00	46.5	507.18	100.032	98.327	12.36
7.8	34577.00	46.5	508.49	100.007	98.233	12.308
7.9	35042.00	46.6	509.85	99.982	98.133	12.258
8.0	35507.00	46.6	511.27	99.955	98.028	12.211
8.1	35977.00	46.7	513.2	99.929	97.911	12.17
8.2	36447.00	46.8	515.33	99.903	97.79	12.131
8.3	36918.00	46.8	517.55	99.88	97.665	12.094
8.4	37389.00	46.9	519.86	99.846	97.537	12.059
8.5	37860.00	47.0	522.26	99.82	97.405	12.026
8.6	38331.00	47.1	524.75	99.786	97.27	11.995
8.7	38801.00	47.1	527.32	99.755	97.131	11.966
8.8	39272.00	47.2	529.99	99.722	96.989	11.938
8.9	39743.00	47.3	532.74	99.689	96.843	11.913
9.0	40214.00	47.4	535.58	99.654	96.694	11.889
9.1	40691.00	47.5	538.87	99.618	96.525	11.87
9.2	41170.00	47.6	542.24	99.582	96.352	11.853
9.3	41649.00	47.7	545.61	99.544	96.18	11.837
9.4	42128.00	47.8	548.97	99.506	96.009	11.822
9.5	42607.00	47.8	552.33	99.467	95.84	11.808
9.6	43086.00	47.9	555.67	99.426	95.672	11.796
9.7	43565.00	48.0	559.01	99.385	95.505	11.785
9.8	44044.00	48.1	562.34	99.343	95.339	11.775
9.9	44523.00	48.2	565.66	99.299	95.174	11.767
10.0	45002.00	48.3	568.98	99.255	95.011	11.759
10.1	45489.00	48.4	572.58	99.208	94.835	11.755
10.2	45978.00	48.5	576.18	99.16	94.661	11.751
10.3	46467.00	48.6	579.68	99.111	94.491	11.749
10.4	46955.00	48.7	583.1	99.062	94.326	11.747
10.5	47444.00	48.8	586.44	99.013	94.166	11.747
10.6	47933.00	48.9	589.68	98.963	94.011	11.747
10.7	48422.00	49.0	592.84	98.912	93.86	11.748
10.8	48911.00	49.1	595.9	98.862	93.714	11.75
10.9	49399.00	49.1	598.88	98.81	93.573	11.753
11.0	49888.00	49.2	601.77	98.758	93.437	11.757
11.1	50382.00	49.3	604.37	98.705	93.298	11.762
11.2	50878.00	49.4	606.91	98.652	93.165	11.768
11.3	51373.00	49.4	609.46	98.599	93.04	11.775
11.4	51868.00	49.5	612.03	98.545	92.924	11.783
11.5	52364.00	49.6	614.62	98.492	92.816	11.791
11.6	52859.00	49.7	617.21	98.483	92.716	11.8
11.7	53356.00	49.7	619.81	98.384	92.624	11.81
11.8	53856.00	49.8	622.7	98.33	92.545	11.821
11.9	54355.00	49.9	625.62	98.276	92.468	11.832
12.0	54855.00	50.0	628.53	98.223	92.395	11.844
12.1	55357.00	50.1	631.42	98.17	92.323	11.857
12.2	55860.00	50.1	634.28	98.117	92.253	11.87
12.3	56363.00	50.2	637.12	98.064	92.186	11.884
12.4	56866.00	50.3	639.94	98.012	92.121	11.899
12.5	57369.00	50.4	642.75	97.96	92.058	11.915
12.6	57872.00	50.4	645.53	97.908	91.997	11.931
12.7	58378.00	50.5	648.29	97.857	91.938	11.948
12.8	58885.00	50.6	651.02	97.805	91.882	11.965
12.9	59392.00	50.7	653.74	97.755	91.827	11.984

PRIMJER 1 – draft survey // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) iskrcava cirkonij u luci Antwerp. U vrijeme initial survey-a izmjerena je specifična gustoća mora 1.022 a u vrijeme final survey-a 1.023. Odredi težinu iskcanog tereta. Očitani gazovi i poznate težine su:

Initial Survey					Final Survey		
Date / Time :	01.12.2011 11:15				Date / Time :	03.12.2011 - 02:00	
10.20 mts	10.22 mts	10.21 mts			4.52 mts	4.50 mts	4.51 mts
			Hog	Hog			
10.18 mts	10.25 mts	10.22 mts	0.01 mts	0.08 mts	5.39 mts	5.31 mts	5.35 mts
10.23 mts	10.26 mts	10.25 mts			6.38 mts	6.31 mts	6.35 mts

Observed Density :	1.022	Observed Density :	1.023
Ballast :	88.0 MT	Ballast :	13,298.0 MT
(Ballast Density) :	(@ 1.000)	(Ballast Density) :	(@ 1.000)
H.F.O :	393.9 MT	H.F.O :	714.0 MT
M.D.O :	45.5 MT	M.D.O :	83.6 MT
Lube Oil :	00 MT	Lube Oil :	00 MT
Fresh Water :	120.0 MT	Fresh Water :	94.0 MT
Light Ship :	8,965 MT	Light Ship :	8,965 MT
Others :	00 MT	Others :	00 MT
Total :	9,612 MT	Total :	23,155 MT

Calculations	Calculations	Calculations	Calculations
Calculations			
Mean F'ord Draught :	10.21 mts	Mean F'ord Draught :	4.51 mts
Stem Correction :	-0.0005	Stem Correction :	-0.0280
Mean F'ord Corrected :	10.209 mts	Mean F'ord Corrected :	4.482 mts
Mean Aft Draught :	10.25 mts	Mean Aft Draught :	6.35 mts
Stern Correction :	0.0017	Stern Correction :	0.0880

Mean Aft Corrected :	10.247 mts
Mean Draught F & Aft:	10.228 mts
Corrected Trim F - Aft :	-0.0372
Mean Midships Draught :	10.22 mts
Midships Corrected :	0.0000
Midships Mean Corrected :	10.215 mts
Qvarter Mean Draft :	10.2183 mts
Lf :	2.76
La :	8.68
Lm :	0
TPC :	48.518
LCF :	94.6299
MCTC :	33.7807
I Trim :	1.473
II Trim :	0.012
Total Trim :	1.485
Displacement :	46,067.33
Trim Correction :	1.485
Disp. Corrected for Trim :	46,068.82
Observed Density :	1.022
Disp. corrected for Density :	45,933.98
Deductibles :	9,612 MT
Cargo + Constants :	36,322 MT

Mean Aft Corrected :	6.433 mts
Mean Draught F & Aft:	5.458 mts
Corrected Trim F - Aft :	-1.9510
Mean Midships Draught :	5.35 mts
Midships Corrected :	0.0000
Midships Mean Corrected :	5.350 mts
Qvarter Mean Draft :	5.3769 mts
Lf :	2.76
La :	8.68
Lm :	0
TPC :	45.700
LCF :	99.8946
MCTC :	5.9278
I Trim :	72.759
II Trim :	5.864
Total Trim :	78.623
Displacement :	23,381.87
Trim Correction :	78.623
Disp. Corrected for Trim :	23,460.50
Observed Density :	1.023
Disp. corrected for Density :	23,414.72
Deductibles :	23,155 MT
Constants :	260 MT
Cargo Discharged :	36,061 MT

PRIMJER 2 – draft survey// Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) iskrcava cirkonij u luci Antwerp. U vrijeme initial survey-a izmjerena je specifična gustoća mora 1.022 a u vrijeme final survey-a 1.023. Odredi težinu iskcanog tereta. Očitani gazovi i poznate težine su:

Initial Survey				Final Survey		
Date / Time :	08.11.2011 - 11:45			Date / Time :	12.11.2011 - 08:00	
10.38 mts	10.36 mts			4.91 mts	4.93 mts	
		10.37 mts				4.92 mts
10.41 mts	10.38 mts		Sag	5.29 mts	5.31 mts	
		10.40 mts	-0.03 mts	Hog		5.30 mts
				0.09 mts		
10.39 mts	10.34 mts			5.85 mts	5.89 mts	
		10.37 mts				5.87 mts

Observed Density :	1.022	Observed Density :	1.023
Ballast :	88.0 MT	Ballast :	13,004.0 MT
(Ballast Density) :	(@ 1.000)	(Ballast Density) :	(@ 1.000)
H.F.O :	393.9 MT	H.F.O :	714.0 MT
M.D.O :	45.5 MT	M.D.O :	83.6 MT
Lube Oil :	00 MT	Lube Oil :	00 MT
Fresh Water :	120.0 MT	Fresh Water :	94.0 MT
Light Ship :	8,965 MT	Light Ship :	8,965 MT
Others :	00 MT	Others :	00 MT
Total :	9,612 MT	Total :	22,861 MT

Calculations Calculations	Calculations	Calculations	Calculations
Mean F'ord Draught :	10.37 mts	Mean F'ord Draught :	4.92 mts
Stem Correction :	0.0001	Stem Correction :	-0.0145
Mean F'ord Corrected :	10.370 mts	Mean F'ord Corrected :	4.906 mts
Mean Aft Draught :	10.37 mts	Mean Aft Draught :	5.87 mts
Stern Correction :	-0.0002	Stern Correction :	0.0456

Mean Aft Corrected :	10.365 mts
Mean Draught F & Aft:	10.367 mts
Corrected Trim F - Aft :	0.0053
Mean Midships Draught :	10.40 mts
Midships Corrected :	0.0000
Midships Mean Corrected :	10.395 mts
Qvarter Mean Draft :	10.3881 mts
Lf :	2.76
La :	8.68
Lm :	0
TPC :	48.688
LCF :	94.3456
MCTC :	33.2604
I Trim :	-0.249
II Trim :	0
Total Trim :	-0.249
Displacement :	46,896.95
Trim Correction :	-0.249
Disp. Corrected for Trim :	46,896.70
Observed Density :	1.022
Disp. corrected for Density :	46,759.44
Deductibles :	9,612 MT
Cargo + Constants :	37,147 MT

Mean Aft Corrected :	5.916 mts
Mean Draught F & Aft:	5.411 mts
Corrected Trim F - Aft :	-1.0101
Mean Midships Draught :	5.30 mts
Midships Corrected :	0.0000
Midships Mean Corrected :	5.300 mts
Qvarter Mean Draft :	5.3276 mts
Lf :	2.76
La :	8.68
Lm :	0
TPC :	45.700
LCF :	99.9192
MCTC :	6.0509
I Trim :	44.489
II Trim :	1.604
Total Trim :	46.093
Displacement :	23,155.84
Trim Correction :	46.093
Disp. Corrected for Trim :	23,201.94
Observed Density :	1.023
Disp. corrected for Density :	23,156.67
Deductibles :	22,861 MT
Constants :	296 MT
Cargo Discharged :	36,851 MT

PRIMJER 3 – Ukrcaj i raspored tereta // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) krca Sumpor, specifične težine 0.797 MT/ cubm, u luci Mackay, Aus za luku Portland, USA. U luci ukrcaja specifična gustoća mora je 1.011. Željeni gaz nakon ukrcaja je 11.41m a trim 0.7m (brod zatežan). Odredi raspored tereta (težina) po skladištima uzimajući u obzir kapacitet skladišta, željeni gaz i trim po završetku ukrcaja. Poznate težine su:

TANK	TYPE	CAPAC.	WEIGHT	VCG	V.MOM	LCG	H.MOM	F.S. MOM
		CBM						
FP	BALL	1652.5	0	8.589	0	183.272	0	0
DB1P/S	BALL	787.28	0	5.44	0	168.095	0	0
DB2P/S	BALL	1393.36	0	6.63	0	150.78	0	0
DB3P/S	BALL	3248.12	0	7.52	0	122.501	0	0
DB6P/S	BALL	2298.1	0	8.852	0	67.566	0	0
DB7P/S	BALL	1415.27	0	8.177	0	41.826	0	0
HOLD 3	BALL	8116.79	0	8.94	0	130.036	0	0
HOLD 5	BALL	8116.79	0	8.94	0	82.336	0	0
FW P/S	FW	207.5	114	14.845	1692.33	5.449	621.186	447.4
AP	FW	280.81	1	11.757	11.757	2.376	2.376	0
STER.TU	FW	72.14	72	9.463	681.336	5.159	371.448	0
FO4P/S	FO	1031.8	14	1.543	21.602	101.408	1419.712	5095
FO5P/S	FO	1256.12	149	1.543	229.907	81.135	12089.12	6202
SERV.10	FO	56.97	36	14.589	525.204	23.53	847.08	69.2
SETL.11	FO	60.7	37	14.564	538.868	27.481	1016.797	77
OV.FLOW	FO	36.7	6	1.421	8.526	11.785	70.71	37.8
DO22P/S	DO	339.63	124	1.504	186.496	25.628	3177.872	545.1
DO12/13	DO	23.52	15	14.85	222.75	19.928	298.92	3.9
GO 26	GO	49.22	20	15.159	303.18	1.065	21.3	40.9
LO	LO	146	28	14.9	417.2	18.72	524.16	67.3
CONSTANTS			530	12	6360	87.5	46375	
LIGHT SHIP			8965	10.555	94625.58	83.62	749653.3	
TOTAL 1			10111	10.4663	105824.7	80.75254	816489	12585.6
	DENSITY OF SEA W.:		1.011	Hidrostatic table data prepared for density:				1.025
	DESIRED DRAFT	DISP."	CORR.DISP	TPC	MCTC	LCB	LCF	KM
	11.41	51917.6	**51208.48**	49.51	612.289	98.5397	92.9132	11.7838
	CARGO TO BE LOADED:		**41097.48**					

	FOR DESIRED TRIM:		0.7					
		MT	LCG	H.MOM				
	CORR.DISP	51208.48	97.71416	5003794				
	FULL HOLDS	32646.3		3462410				
	TOTAL 1	10111	80.75254	816489				
	DIFF:	8451.16	85.7746	724895				
	TRIMMING WITH HOLDS:			1	7			
	CARGO TO BE LOADED:			2949.673	5501.48			

HOLD	CAPAC.	SG. OF	MAX WEI.	WEIGHT	VOLUME	VCG	V.MOM	LCG	H.MOM	F.S. MOM
	CBM	CARGO	MT	MT	CBM					
1	5285.56	0.797	4212.59	2949.673	3700.97	9.649851	28463.9	168.656	497480	
2	7096.04	0.797	5655.54	5655.54	7096.04	9.191905	51985.2	150.614	851804	
3	8466.38	0.797	6747.7	6747.7	8466.38	8.924745	60221.5	130.036	877445	
4	9733.73	0.797	7757.78	7757.78	9733.73	9.193456	71320.8	106.186	823768	
5	8466.38	0.797	6747.7	6747.7	8466.38	9.123425	61562.2	82.336	555579	
6	7198.98	0.797	5737.59	5737.59	7198.98	8.61014	49401.4	61.666	353814	
7	7990.04	0.797	6368.06	5501.48	6902.741	8.273016	45513.9	41.337	227415	
TOTAL 2			43227	41097.48			368469		4187305	
TOTAL 1				10111			105825		816489	12585.6
GRAND TOTAL				51208.48		9.26201	474294	97.7142	5003794	12585.6
STABILITET:										
F.S. MOM Corr		0.245772								
KG		9.26201								
KM		11.7838								
GM>0.30m		2.27601								

PRIMJER 4 – Ukrcaj i raspored tereta // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) krca Sumpor, specifične težine 0.797 MT/ cubm, u luci Mackay, Aus za luku Portland, USA. U luci ukrcaja specifična gustoća mora je 1.011. Željeni gaz nakon ukrcaja je 11.53m a trim 0.4m (brod zatežan). Odredi raspored tereta (težina) po skladištima uzimajući u obzir kapacitet skladišta, željeni gaz i trim po završetku ukrcaja. Poznate težine su:

TANK	TYPE	CAPAC.	WEIGHT	VCG	V.MOM	LCG	H.MOM	F.S. MOM
		CBM						
FP	BALL	1652.5	0	8.589	0	183.272	0	0
DB1P/S	BALL	787.28	0	5.44	0	168.095	0	0
DB2P/S	BALL	1393.36	0	6.63	0	150.78	0	0
DB3P/S	BALL	3248.12	0	7.52	0	122.501	0	0
DB6P/S	BALL	2298.1	0	8.852	0	67.566	0	0
DB7P/S	BALL	1415.27	0	8.177	0	41.826	0	0
HOLD 3	BALL	8116.79	0	8.94	0	130.036	0	0
HOLD 5	BALL	8116.79	0	8.94	0	82.336	0	0
FW P/S	FW	207.5	114	14.845	1692.33	5.449	621.186	447.4
AP	FW	280.81	280	11.757	3291.96	2.376	665.28	0
STER.TU	FW	72.14	72	9.463	681.336	5.159	371.448	0
FO4P/S	FO	1031.8	14	1.543	21.602	101.408	1419.712	5095
FO5P/S	FO	1256.12	820	1.543	1265.26	81.135	66530.7	6202
SERV.10	FO	56.97	36	14.589	525.204	23.53	847.08	69.2
SETL.11	FO	60.7	37	14.564	538.868	27.481	1016.797	77
OV.FLOW	FO	36.7	6	1.421	8.526	11.785	70.71	37.8
DO22P/S	DO	339.63	124	1.504	186.496	25.628	3177.872	545.1
DO12/13	DO	23.52	15	14.85	222.75	19.928	298.92	3.9
GO 26	GO	49.22	20	15.159	303.18	1.065	21.3	40.9
LO	LO	146	28	14.9	417.2	18.72	524.16	67.3
CONSTANTS			530	12	6360	87.5	46375	
LIGHT SHIP			8965	10.555	94625.58	83.62	749653.3	
TOTAL 1			11061	9.957534	110140.3	78.79879	871593.5	12585.6
	DENSITY OF SEA W.:		1.011	Hidrostatic table data prepared for density:				1.025
	DESIRED DRAFT	DISP."	CORR.DISP	TPC	MCTC	LCB	LCF	KM
	11.53	52512.5	**51795.26**	49.63	615.397	98.4893	92.786	11.7937
	CARGO TO BE LOADED:		**40734.26**					

	FOR DESIRED TRIM:		0.4					
		MT	LCG	H.MOM				
	CORR.DISP	51795.26	98.02054	5076999				
	FULL HOLDS	32646.3		3462410				
	TOTAL 1	11061	78.79879	871593.5				
	DIFF:	8087.93	91.8647	742996				
	TRIMMING WITH HOLDS:			1	7			
	CARGO TO BE LOADED:			3209.771	4878.16			

HOLD	CAPAC.	SG. OF	MAX WEI.	WEIGHT	VOLUME	VCG	V.MOM	LCG	H.MOM	F.S. MOM
	CBM	CARGO	MT	MT	CBM					
1	5285.56	0.797	4212.59	3209.771	4027.317	9.649851	30973.8	168.656	541347	
2	7096.04	0.797	5655.54	5655.54	7096.04	9.191905	51985.2	150.614	851804	
3	8466.38	0.797	6747.7	6747.7	8466.38	8.924745	60221.5	130.036	877445	
4	9733.73	0.797	7757.78	7757.78	9733.73	9.193456	71320.8	106.186	823768	
5	8466.38	0.797	6747.7	6747.7	8466.38	9.123425	61562.2	82.336	555579	
6	7198.98	0.797	5737.59	5737.59	7198.98	8.61014	49401.4	61.666	353814	
7	7990.04	0.797	6368.06	4878.16	6120.654	8.273016	40357.1	41.337	201649	
TOTAL 2			43227	40734.26			365822		4205405	
TOTAL 1				11061			110140		871593	12585.6
GRAND TOTAL				51795.26		9.18931	475962	98.0205	5076999	12585.6
STABILITET:										
F.S. MOM Corr		0.242988								
KG		9.18931								
KM		11.7937								
GM>0.30m		2.36141								

PRIMJER 5 – Proračun gaza na zagaznicama broda nakon računa ukrcaja tereta // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) krca fosfor u luci Camden. Specifična gustoća mora 1.017. Željeni gaz je 12.27m a trim 0.26m. Izračunati QMD, gazove na perpendikularima i zagaznicama.

DESIRED DRAFT		CORR.DISP	TPC	MCTC	LCB	LCF	KM
12.27		**55424.02**	50.1	634.28	98.117	92.253	11.87
FOR DESIRED TRIM:		0.26					
RAČUN GAZA NAKON RAČUNA UKRAJA I TRIMOVANJA							
Lbp	192.4		Fd	Ad	Md		
QMD	12.26449		2.76	-8.68	0		
DF Mean corr	12.13449						
DA Mean corr	12.39449						
DM Mean corr	12.26449						
DF Mean read	12.13822						
DA Mean read	12.38276						
DM Mean read	12.26449						

PRIMJER 6 – Proračun gaza na zagaznicama broda nakon računa ukrcaja tereta // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) krca fosfor u luci Camden. Specifična gustoća mora 1.010. Željeni gaz je 11.43m a trim 0.85m. Izračunati QMD, gazove na perpendikularima i zagaznicama.

DESIRED DRAFT		CORR.DISP	TPC	MCTC	LCB	LCF	KM
11.43		**51255.58**	49.53	612.807	98.5291	92.8916	11.7854
FOR DESIRED TRIM:		0.85					
RAČUN GAZA NAKON RAČUNA UKRAJA I TRIMOVANJA							
Lbp	192.4		Fd	Ad	Md		
QMD	11.41351		2.76	-8.68	0		
DF Mean corr	10.98851						
DA Mean corr	11.83851						
DM Mean corr	11.41351						
DF Mean read	11.0007						
DA Mean read	11.80016						
DM Mean read	11.41351						

PRIMJER 7 – Iskcaj/ukrcaj dodatnih težina tijekom putovanja i proračun gaza broda// Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) nakon ukrcaja tereta u luci Camden ima sljedeće podatke:

DISP	VCG	V.MOM	LCG	H.MOM
54979	9.1987	505734.9276	97.5084	5360911

Isplovljava za luku Antwerp gdje je specifična gustoća mora 1.018. Potrošnja goriva do odredišta te proizvedena voda iznosi:

AP	200
FO4P/S	-690

Izračunati QMD, trim, gazove na perpendikularima i zagaznicama na dolasku luka Antwerp.

RAČUN GAZA NAKON UKRCAJA/ISKRCAJA DODATNIH TEŽINA:							UKRCAJ / POTROŠNJA TEKUĆINE:					
	WEIGHT	VCG	V.MOM	LCG	H.MOM			WEIGHT	VCG	V.MOM	LCG	H.MOM
LUKA 1	54979	9.1987	505734.9276	97.5084	5360911		AP	200	11.757	2351.4	2.376	475.2
LUKA 2	-490		1286.73		-69496.3		FO4P/S	-690	1.543	-1064.67	101.408	-69971.5
TOTAL 4	54489	9.30504	507021.6576	97.1099	5291415		TOTAL 3	-490		1286.73		-69496.3
	S.G.SEA W.:		1.022		DISP."	DRAFT	TPC	MCTC	LCB	LCF	KM	
					54648.9	12.06	49.95878	627.3305	98.24485	92.42509	11.83905	
TRIM	0.988715											
QMD	12.03684											
DF Mean corr	11.54248		DF Mean read	11.55667								
DA Mean corr	12.5312		DA Mean read	12.48659								
DM Mean corr	12.03684		DM Mean read	12.03684								

PRIMJER 8 – Iskcaj/ukrcaj dodatnih težina tijekom putovanja i proračun gaza broda// Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) nakon ukrcaja tereta u luci Pascagoula ima sljedeće podatke:

DISP	VCG	V.MOM	LCG	H.MOM
56012.4	9.19154	514839.5155	97.3888	5454973

Isplovljava za luku Bilbao gdje je specifična gustoća mora 1.011. Potrošnja goriva do odredišta te proizvedena voda iznosi:

AP	120
FO4P/S	-1050

Izračunati QMD, trim, gazove na perpendikularima i zagaznicama na dolasku luka Bilbao.

RAČUN GAZA NAKON UKRCAJA/ISKRCAJA DODATNIH TEŽINA:							UKRCAJ / POTROŠNJA TEKUĆINE:					
	WEIGHT	VCG	V.MOM	LCG	H.MOM			WEIGHT	VCG	V.MOM	LCG	H.MOM
LUKA 1	56012.4	9.19154	514839.5155	97.3888	5454973		AP	120	11.757	1410.84	2.376	285.12
LUKA 2	-930		-209.31		-106193		FO4P/S	-1050	1.543	-1620.15	101.408	-106478
TOTAL 4	55082.4	9.34292	514630.2055	97.1051	5348780		TOTAL 3	-930		-209.31		-106193
	S.G.SEA W.:		1.02		DISP."	DRAFT	TPC	MCTC	LCB	LCF	KM	
					55352.37	12.20	50.09908	631.3933	98.17049	92.32366	11.85688	
TRIM	0.933956											
QMD	12.17799											
DF Mean corr	11.71102		DF Mean read	11.72441								
DA Mean corr	12.64497		DA Mean read	12.60284								
DM Mean corr	12.17799		DM Mean read	12.17799								

PRIMJER 9 – Završno trimovanje ili ukrcaj dodatnog tereta // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) pri kraju ukrcaja tereta a prije završnog trimovanja u luci Pascagoula, gdje je specifična gustoća mora 1.021, ima sljedeće podatke nakon očitanog gaza:

prije trimovanja, očitani gaz sveden na perpendikulare:	
DF Mean corr	10.89
DA Mean corr	12.13
DM Mean corr	11.51

željeni gaz na perpendikularima nakon trimovanja:	
DF Mean corr	11.6
DA Mean corr	11.9
DM Mean corr	11.75

Potrebno izračunati, nakon trimovanja: QMD, TRIM i raspored tereta u skladištima za trimovanje (1 i 7).

POSTOJEĆE:														
DF Mean corr	10.89		POSTOJEĆE:	DISP	TPC	MCTC	LCB	LCF	KM			MT	LCG	H.MOM
DA Mean corr	12.13		DISP"	52413.5	49.61	614.879	98.4911	92.806	11.7919		CORR.DISP	52208.96	97.03072	5065873
DM Mean corr	11.51		DISP	52208.96										
QMD	11.51													
TRIM	1.24		ŽELJENO:	DISP	TPC	MCTC	LCB	LCF	KM			MT	LCG	H.MOM
S.G.SEA W.	1.021		DISP"	53356	49.7	619.81	98.384	92.624	11.81		CORR.DISP	53147.78	98.03414	5210297
ŽELJENO:			DISP	53147.78										
DF Mean corr	11.6											MT	LCG	H.MOM
DA Mean corr	11.9									DIFF.	CARGO	938.822	153.8355	144424.2
DM Mean corr	11.75													
QMD	11.75									**TRIMMING WITH HOLDS:**			1	7
TRIM	0.3									CARGO TO BE LOADED:			829.5391	109.283
S.G.SEA W.	1.021													

PRIMJER 10 – Završno trimovanje ili ukrcaj dodatnog tereta // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) pri kraju ukrcaja tereta a prije završnog trimovanja u luci Pascagoula, gdje je specifična gustoća mora 1.009, ima sljedeće podatke nakon očitanog gaza:

prije trimovanja, očitani gaz sveden na perpendikulare:	
DF Mean corr	11.02
DA Mean corr	11.74
DM Mean corr	11.38

željeni gaz na perpendikularima nakon trimovanja:	
DF Mean corr	11.52
DA Mean corr	11.86
DM Mean corr	11.69

Potrebno izračunati, nakon trimovanja: QMD, TRIM i raspored tereta u skladištima za trimovanje (1 i 7).

POSTOJEĆE:														
DF Mean corr	11.02		POSTOJEĆE	DISP	TPC	MCTC	LCB	LCF	KM			MT	LCG	H.MOM
DA Mean corr	11.74		DISP"	51769	49.48	611.516	98.5558	92.9472	11.7814		CORR.DISP	50960.9	97.69182	4978463
DM Mean corr	11.38		DISP	50960.9										
QMD	11.38													
TRIM	0.72		ŽELJENO:	DISP	TPC	MCTC	LCB	LCF	KM			MT	LCG	H.MOM
S.G.SEA W.	1.009		DISP"	53306.3	49.7	619.55	98.3939	92.6332	11.809		CORR.DISP	52474.2	97.99247	5142077
ŽELJENO:			DISP	52474.2										
DF Mean corr	11.52											MT	LCG	H.MOM
DA Mean corr	11.86									DIFF.	CARGO	1513.303	108.1169	163613.7
DM Mean corr	11.69													
QMD	11.69									**TRIMMING WITH HOLDS:**			1	7
TRIM	0.34									CARGO TO BE LOADED:			793.7407	719.562
S.G.SEA W.	1.009													

PRIMJER 11– Ukrcaj teškog tereta brodskom dizalicom // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) ukrcava teški teret brodskom dizalicom. Poznati (zadani) podaci označeni su žutom bojom. Treba izračunati sve ostale vrijednosti (odnosno one koje su označene plavom bojom).

Ukrcaj tereta dizalicom			podizanje s obale i smještanje na brod na nekoj udaljenosti od uzdužnice			
	treba izračunati:		MoG1 i fi u trenutku podizanja tereta			
			MoG2 i fi nakon spuštanja tereta na brod			
DF	DA	DFT	D	KM		
6.4	6.9	6.65	14800	8.6		
W (teret)				170		
KGt (KG tereta)				6.0		
d (teret složen lijevo od uzdužnice)				7.50		
hs (hvatište dizalice od kobilice)				22.00		
d (otklon samarice od uzdužnice)				14.50		
KM=	8.60					
KG=	7.64				h1=	14.36
GM=	0.96				GG1=	0.16
FSCorr=	0.22				tg (fi1)=	0.2854132
GMcorr=	**0.74**				**fi1=**	**15.9**
GMcorr=	0.74				h2=	-1.64
GG1=	0.16				GG2=	-0.02
GM1=	**0.58**					
GMcorr=	0.74				tg (fi2)=	0.1122695
GG2=	-0.02				**fi2=**	**6.4**
GM2=	**0.76**					

PRIMJER 11– Ukrcaj teškog tereta brodskom dizalicom // Brod "Sirius" (osnovna svojstva i hidrostatske tablice u prilogu) ukrcava teški teret brodskom dizalicom. Poznati (zadani) podaci označeni su žutom bojom. Treba izračunati sve ostale vrijednosti (odnosno one koje su označene plavom bojom).

Ukrcaj tereta dizalicom			podizanje s obale i smještanje na brod na nekoj udaljenosti od uzdužnice			
	treba izračunati:		MoG1 i fi u trenutku podizanja tereta			
			MoG2 i fi nakon spuštanja tereta na brod			
DF	DA	DFT	D	KM		
6.6	6.98	6.79	15200	8.72		
W (teret)				110		
KGt (KG tereta)				6.6		
d1 (teret složen lijevo od uzdužnice)				9.40		
hs (hvatište dizalice od kobilice)				23.00		
d2 (otklon samarice od uzdužnice)				15.50		
KM=	8.72					
KG=	7.22				h1=	15.78
GM=	1.50				GG1=	0.11
FSCorr=	0.14				tg (fi1)=	0.0893334
GMcorr=	**1.36**				**fi1=**	**5.1**
GMcorr=	1.36				h2=	-0.62
GG1=	0.11				GG2=	0.00
GM1=	**1.25**					
GMcorr=	1.36				tg (fi2)=	0.0494978
GG2=	0.00				**fi2=**	**2.8**
GM2=	**1.36**					