TOÅRIGE ENGELSKSPRÅKLIGE MASTERPROGRAM INNENFOR TEKNOLOGI

Engelskspråklige emnebeskrivelser står ikke angitt i denne boken. Det gjør heller ikke de spesielle emnene som er opprettet kun for disse programmene.

Informasjon om masterprogrammene i sin helhet står angitt i studiehåndboken "Degree Programmes" for

"Master of Science in Engineering
Master of Science in Natural Science
Master of Philosophy"

MSC-PROGRAMME IN COASTAL AND MARINE CIVIL ENGINEERING (MSCOASTMAR)

Term 1, 2, 3 and 4

Ex	Subject no	Subject title	Note	Autumn			Spring			Cr	Exam	Specialization				
				F	Ø	S	F	Ø	S			1	2	3	4	5
1h	TBA4265	MARINE PHYS ENV		3	2	7				7,5	x	o	o	o	o	o
1h	TBA4305	TRANSPORT SYSTEMS	1	3	3	6				7,5	x	v	v	v	v	v
1h	TBA5100	GEOTECH CALC METH		3	2	7				7,5	x	o	o	o	o	o
1h	TGB4235	SPREADING POLLUTION	1	3	2	7				7,5	x	v	v	v	v	v
1h	TKT5100	DUR/MAINT/REP CONCR		3	2	7				7,5	x	o	o	o	o	o
1v	-	EXP IN TEAM INT PROSJ						5	7	7,5	-	o	o	o	o	o
1v	TBA4115	GEOTECH STRUCTURES	2				3	3	6	7,5	x	v	v	v	v	o
1v	TBA4145	PORT/COAST FACILITY	2				3	2	7	7,5	x	v	o	v	v	v
1v	TBA4270	COASTAL ENGINEERING	2				3	2	7	7,5	x	o	v	v	v	v
1v	TBA4275	DYNAMIC RESPONSE	2				3	2	7	7,5	x	v	v	o	o	v
1v	TBA4310	TRANSPORT TECHNOLOGY					3	3	6	7,5	x	v	v	v	v	v
1v	AAR4230	PLAN IN DEV COUNTRY	3,4				3	1	8	7,5	x	v	v	v	-	v
		Total weighting compulsory course								37,5						
2h	TBA5700	COASTAL/MAR ENG SPEC	5			36				22,5	x	o	o	o	o	o
2h	-	ARCTIC OFFSHORE ENG	6							7,5	x	-	-	-	o	-
2h	GEOG3506	GEO HEALTH AND DEV	7	4	1	7				7,5	x	v	v	v	v	v
2h	DIA4001	RES METHODS FOR ARCH	7	2	3	7				7,5	x	v	v	v	v	v
2v		Master Thesis	8							30,0						

o = Compulsory courses
v = Optional courses

Ex 1h = Term 1, Exam Autumn
Ex 1v = Term 2, Exam Spring
Ex 2h = Term 3, Exam Autumn
Ex 2v = Term 4, Master Thesis Spring

1) Select one of the subjects.
2) Select a minimum of two of the subjects.
3) Select up to one subject. Other available subjects could be selected if approved by the professor in charge.
4) Number of participants might be restricted.
5) Specialization project work (11,25 Credits) should preferably be taken in co-operation with partner institutions. For Arctic Offshore Engineering the project might be taken at UNIS, Svalbard. Select the theory part among the course offer in subject TBA5700. Following approval by the professor in charge, one of these might be replaced by another available theory part.
6) Course offer for students in Arctic Offshore Engineering taking the term at UNIS, Svalbard.
7) Select one subject. Other available non-technical subjects might be chosen provided approval by professor in charge.
8) Master thesis should preferably be taken in co-operation with partner institutions. Students in Arctic Offshore Engineering might take the Master thesis at UNIS, Svalbard.

Specialization:
1 Coastal Engineering
2 Port Engineering
3 Marine Civil Engineering
4 Arctic Offshore Engineering
5 Marine Geotechnics

MSC-PROGRAMME IN EARTH SCIENCES AND PETROLEUM ENGINEERING

Term 1, 2, 3 and 4

PETROLEUM ENGINEERING (MSG1)

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam	Specialization 1	2	3	4
1h	TPG4145	RESERVOIR FLUIDS		4	6	2				7,5	x	o	o	v	v
1h	TPG4150	RESERVOIR REC TECHN		4	4	4				7,5	x	o	o	o	o
1h	TPG4177	CARB RESERVOIR CHAR		4	2	6				7,5	x	v	v	v	v
1h	TPG4215	HIGH DEV DRILLING		4	1	7				7,5	x	v	v	o	v
1h	TPG5100	MATH/COMPUTER METHOD		2	8	2				7,5	-	o	o	o	o
1h	TPG5120	PETROPHYSICS BC	1	4	2	6				7,5	x	v	v	v	v
1v	TPG4160	RESERVOIR SIMULATION					4	4	4	7,5	x	o	v	v	v
1v	TPG4180	PETR PHYS INTERPR AC	1				4	2	6	7,5	x	v	v	v	o
1v	TPG4205	DRILL TECH PR CONTR					2	2	8	7,5	x	v	v	v	v
1v	TPG4220	DRILLING FLUID/HYDR					2	2	8	7,5	x	v	v	o	v
1v	TPG4225	FRACTURED RESERVOIR					3	2	7	7,5	x	v	v	v	v
1v	TPG4230	WELL TECHNOLOGY					3	2	7	7,5	x	o	o	o	o
1v	TPG5110	PETROLEUM ECONOMICS					3	2	7	7,5	x	v	v	v	v
		Total weighting compulsory subjects	2							30,0/ 37,5					
2h	TPG4185	FORMATION MECHANICS		3	3	6				7,5	x	v	v	v	v
2h	TPG4700	FORM EV-ENG SPEC				36				22,5	x	-	-	-	o
2h	TPG4705	PETR PROD SPEC				36				22,5	x	-	o	-	-
2h	TPG4710	DRILLING SPEC				36				22,5	x	-	-	o	-
2h	TPG4715	RESERVOIR ENG SPEC				36				22,5	x	o	-	-	-
2h	TPG5200	PET ENG/GEO INT PROJ		1	3	8				7,5	-	v	v	v	v
		Total weighting compulsory subjects	3							22,5					
2v		Master Thesis								30					

o - compulsory subjects
v - optional subjects

Ex 1h = Term 1, Examen Autumn
Ex 1 v = Term 2, Examen Spring
Ex 2h = Term 3, Exam Autumn
Ex 2v = Term 4, Master Thesis Spring

1) TPG4180 requires TPG5120 or equivalent.
2) Two optional subjects must be chosen in the autumn semester (1h) in specialization 4. In specialization 1, 2 and 3 one optional subject must be chosen. Three optional subjects must be chosen in the spring semester (1v) in specialization 2. Two subjects must be chosen in specialization 1, 3 and 4.
3) One subject must be chosen in the third semeser (2h). In addition to the subject listed, students can also choose from first semester, Petroleum Engineering, Petroleum Geosciences ad Phd-courses if taught in English.

Specialization:
1 Reservoir Engineering
2 Petroleum Production
3 Drilling Technology
4 Formation Evaluation

MSC-PROGRAMME IN EARTH SCIENCES AND PETROLEUM ENGINEERING

Term 1, 2, 3 and 4

PETROLEUM GEOSCIENCES (MSG2)

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
1h	TGB4160	PETROLEUM GEOLOGY		3	2	7				7,5	x
1h	TPG4150	RESERVOIR REC TECHN		4	4	4				7,5	x
1h	TPG4177	CARB RESERVOIR CHAR		4	2	6				7,5	x
1h	TPG4185	FORMATION MECHANICS		3	3	6				7,5	x
1h	TPG4195	GRAVIMETR MAGNETOMET		4	1	7				7,5	x
1h	TPG5100	MATH/COMPUTER METHOD		2	8	2				7,5	-
1h	TPG5120	PETROPHYSICS BC	1	4	2	6				7,5	x
1v	TGB4135	BASIN ANALYSIS					2	3	7	7,5	x
1v	TGB4170	DIAGENESIS/RES QUAL					2	2	8	7,5	x
1v	TPG4130	SEISMIC INTERPRET					2	3	7	7,5	x
1v	TPG4170	RESERVOIR SEISMICS					4	1	7	7,5	x
1v	TPG4180	PETR PHYS INTERPR AC	1				4	2	6	7,5	x
1v	TPG5110	PETROLEUM ECONOMICS					3	2	7	7,5	x
		Total weighting compulsory subjects	2							15,0	
2h	TGB4715	PETR GEOLOGY SPEC				36				22,5	x
2h	TPG4120	ENG/ENVIRONM GEOPHYS		2	2	8				7,5	x
2h	TPG4190	SEISMIC DATA		3	2	7				7,5	x
2h	TPG4720	PETR GEOSCIENCE SPEC				36				22,5	x
2h	TPG5200	PET ENG/GEO INT PROJ		1	3	8				7,5	-
		Total weighting compulsory subjects	3							30,0/ 22,5	
2v		Master Thesis								30	

o - compulsory subjects
v - optional subjects

Ex 1h = Term 1, Examen Autumn
Ex 1 v = Term 2, Examen Spring
Ex 2h = Term 3, Exam Autumn
Ex 2v = Term 4, Master Thesis Spring

1) TPG4180 requires TPG5120 or equivalent.
2) In the autumn semester (1h) TPG5100 is compulsory. In the spring semester (1v) TPG4130 is compulsory. Totally four subjects must be chosen each semester, see note 3.
3) In addition to the subjects (listed 2h), students can choose from 1h Petroleum Engineering, 1h Petroleum Geosciences and Phd-courses taught in English.
   Specialization and compulsory subjects within these:
   Seismics: TGB4160 Petroleum Geology (1h), TPG4130 Seismic Interpretation (1v), TPG4170 Reservoir Seismics (1v) and TPG4190 Seismic Data (2h).
   Reservoir Geology: TPG4180 Petrophysics, Interpretation of Well Data AC (1v), TGB4160 Petroleum Geology (1h), TGB4170 Diagenesis/Res.Qual. (1v) and TPG4190 Seismic Data (2h).
   Formation Evaluation: TPG4180 Petrophysics, Interpretation of Well Data AC (1v), TPG4130 Seismic Interpretation (1v) and TPG4185 Formation Mechanics (1h).

MSC-PROGRAMME IN HYDROPOWER DEVELOPMENT (MSB1)

Term 1, 2, 3 and 4

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
1h	TVM5100	HYDROPOWER PLAN 1 BC		8	8	8				15	x
1h	TVM5110	HYDROPOWER PLAN 2 BC		8	8	8				15	x
1v	TVM5120	HYDROPOWER PLAN 3 BC					8	8	8	15	x
1v	TVM5130	HYDROPOWER PROJECT						12	12	15	-
		Total weighting			48			48		60	
2h	TGB5100	ROCK ENGINEERING AC		3	2	7				7,5	x
2h	TVM5150	RIVER SYSTEM ANAL AC		3	2	7				7,5	x
2h	TVM5160	HEADWORKS AND SED AC		3	2	7				7,5	x
2h	TVM5170	SOCIAL IMPACT ASS AC		3	2	7				7,5	x
		Total weighting			48					30	
2v		Master Thesis	1							30	

Ex 1h = Term 1, Exam Autumn
Ex 1v = Term 2, Exam Spring
Ex 2h = Term 3, Exam Autumn
Ex 2v = Term 4, Master Thesis Spring

1) The Master Thesis is to be submitted in term 4 (spring term).

MSC-PROGRAMME IN LIGHT METAL PRODUCTION (MSLIMETAL)

Term 1, 2, 3 and 4

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
1h	TMT4155	HETEROGEN EQUILIBRIA		4	2	6				7,5	x
1h	TMT4185	MATR SCIENCE/ENG		4	2	6				7,5	x
1h	TMT5141	APPLIED THERMODYN		3	2	7				7,5	x
1h	MT8301	CARBON MAT TECHN		2	2	8				7,5	x
1v	TMT4150	REFRACTORIES					4	2	6	7,5	x
1v	TMT4160	HIGH TEMP CHEM PROJ					2	4	6	7,5	-
1v	TMT4235	REFIN/RECYCL METALS					3	2	7	7,5	x
1v	MT8300	ELECTR LIGHT METAL 2					3	2	7	7,5	x
		Total weighting								60,0	
2h	TMT4295	ELECTROLYTIC PROCESS		3	2	7				7,5	x
2h	TMT4730	PROC MET/ELECTR SPEC				36				22,5	x
		Total weighting								30,0	
2v		Master Thesis								30,0	

Ex 1h = Term 1, Exam Autumn
Ex 1v = Term 2, Exam Spring
Ex 2h = Term 3, Exam Autumn
Ex 2v = Term 4, Master Thesis Spring

MSC-PROGRAMME IN MARINE TECHNOLOGY (MSN1)

Term 1 (May-July 2005)*
Term 2 and 3 (Autumn 2005 and Spring 2006)*
Term 4 (Autumn 2004 to February 2005)

MARINE STRUCTURES

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
		Compulsory subjects:									
1a	TMR5140	MARINE STRUCT BC		3	6	3				7,5	x
1a	TMR5150	MARINE DYNAMICS BC		3	6	3				7,5	x
1a	TMR5190	MARINE HYDRODYN BC		4	6	2				7,5	x
		Weighting compulsory courses		10	18	8				22,5	
		Compulsory subjects:									
2h	TMR4190	ELEM METHODS STRUCT		3	6	3				7,5	x
2h	TMR4215	SEA LOADS		3	6	3				7,5	x
2h	TPG5100	MATH/COMPUTER METHOD	1	2	8	2				7,5	-
		Weighting compulsory courses		8	20	8				22,5	
		Optional subjects:									
2h	TMR4200	FATIGUE/FRACTURE	2	3	6	3				7,5	x
2h	TMR4235	STOCH THEORY SEALOAD	2	3	6	3				7,5	x
2v	TMR4195	DESIGN OFFSHOR STRUC	3				3	6	3	7,5	x
2v	TMR4205	BUCKLING/COLLAPS STR	3				3	6	3	7,5	x
2v	TMR4220	NAVAL HYDRODYNAMICS	3				3	6	3	7,5	x
2v	TMR4225	MARINE OPERATIONS	3				3	6	3	7,5	x
2v	TMR4230	OCEANOGRAPHY	3				3	6	3	7,5	x
2v	TMR5160	MARIN STRUCT PROJECT	4					12		7,5	-
2v	TMR5200	MARINE HYDRO PROJECT	4					12		2,5	-
3h	TMR5170	MAR STRUC SPEC SUBJ	5	4	4	4				7,5	x
3h	TMR5220	MAR HYDRO SPEC SUBJ	5	4	4	4				7,5	x
3h		Master Thesis								30,0	

Ex 1a = Term 1, Exam August
Ex 2h = Term 2, Exam Autumn
Ex 2v = Term 3, Exam Spring
Ex 3h = Term 3, Exam Autumn, the Master Thesis is to be submitted in February 2005.

*) MSC-PROGRAMME IN MARINE TECHNOLOGY are offered every second year. Next time starting in May 2005, with preliminary application deadline 1. December 2004 (www.marin.ntnu.no/msc). E-mail for information: mscadm@ivt.ntu.no. The programme may be subject to change.

1) Exercises with examples from marine technology topics.
2) Select 1 of the subjects.
3) Select 3 of the subjects.
4) Select 1 of the subjects.
5) Select 1 of the subjects, so that the total weighting of the programme contains 120 credits (Cr.).

MSC-PROGRAMME IN MARINE TECHNOLOGY (MSN1)

Term 1 (May-July 2005)*
Term 2 and 3 (Autumn 2005 and Spring 2006)*
Term 4 (Autumn 2004 to February 2005)

MARINE SYSTEMS ENGINEERING

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
		Compulsory subjects:									
1a	TMR5100	MAR DESIG/MAR ENG BC		4	6	2				7,5	x
1a	TMR5190	MARINE HYDRODYN BC		4	6	2				7,5	x
1a	TMR5270	OPERATION TECHN BC		3	6	3				7,5	x
		Weighting compulsory courses		11	18	7				22,5	
		Compulsory subjects:									
2h	TMR4115	DESIGN METHODS		3	6	3				7,5	x
2h	TMR4290	DIESEL-EL PROP SYST		3	6	3				7,5	x
2h	TMR5120	DESIGN MAR VEHICLES			12					7,5	-
2v	TMR4130	RISK ANALYSIS SAFETY					2	8	2	7,5	-
2v	TMR4280	INTERNAL COMB ENGINE					3	6	3	7,5	x
		Weighting compulsory courses		6	24	6	5	14	5	37,5	
		Optional subjects:									
2h	TMR4275	MOD/SIM/AN DYN SYST	2	3	6	3				7,5	x
2h	TPG5100	MATH/COMPUTER METHOD	1,2	2	8	2				7,5	-
2v	TMR4125	BUILD SHIPS/PLATFORM	3				3	3	6	7,5	x
2v	TMR4220	NAVAL HYDRODYNAMICS	3				3	6	3	7,5	x
2v	TMR5110	MAR DESIGN PROJECT	4					12		7,5	-
2v	TMR5280	MAR ENGINEER PROJECT	4					12		7,5	-
2v	TMR5290	TECH OPERAT PROJECT	4					12		7,5	-
3h	TMR5130	MAR DESIGN SPEC SUBJ	5	4	4	4				7,5	x
3h	TMR5300	MAR ENG SPEC SUBJ	5	4	4	4				7,5	x
3h	TMR5310	TECH OP SPEC SUBJ	5	4	4	4				7,5	x
3h		Master Thesis								30,0	

Ex 1a = Term 1, Exam August
Ex 2h = Term 2, Exam Autumn
Ex 2v = Term 3, Exam Spring
Ex 3h = Term 3, Exam Autumn, the Master Thesis is to be submitted in February 2005.

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1) Exercises with examples from marine technology topics.
2) Select 1 of the subjects.
3) Select 1 of the subjects.
4) Select 1 of the subjects.
5) Select 1 of the subjects, so that the total weighting of the programme contains 120 credits (Cr.).

MSC-PROGRAMME IN MARINE TECHNOLOGY (MSN1)

Term 1 (May-July 2005)*
Term 2 and 3 (Autumn 2005 and Spring 2006)*
Term 4 (Autumn 2004 to February 2005)

MARINE CONTROL SYSTEMS (No students 2003-2005)

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
		Compulsory subjects:									
1a	TMR5140	MARINE STRUCT BC	1	3	6	3				7,5	x
1a	TMR5150	MARINE DYNAMICS BC		3	6	3				7,5	x
1a	TMR5190	MARINE HYDRODYN BC		4	6	2				7,5	x
		Weighting compulsory courses		10	18	8				22,5	
		Compulsory subjects:									
2h	TMR4215	SEA LOADS		3	6	3				7,5	x
2h	TMR5180	CONTROL ENGINEERING		3	6	3				7,5	x
2h	TMR4240	MARINE CONTROL SYST					3	6	3	7,5	x
2v	TTK4130	MODELLING/SIMULATION					4	4	4	7,5	x
2v	TTK4190	GUIDANCE AND CONTROL					3	2	7	7,5	x
		Weighting compulsory courses		6	12	6	10	12	14	37,5	
		Optional subjects:									
2h	TMR4190	ELEM METHODS STRUCT	2	3	6	3				7,5	x
2h	TMR4275	MOD/SIM/AN DYN SYST	2	3	6	3				7,5	x
2h	TTK4150	NONLINEAR CONTR SYST	2	3	2	7				7,5	x
2h	TTT4140	FUND OF NAVIGATION	2	4	2	6				7,5	x
2v	TMR4220	NAVAL HYDRODYNAMICS	3				3	6	3	7,5	x
2v	TMR4225	MARINE OPERATIONS	3				3	6	3	7,5	x
2v	TMR4230	OCEANOGRAPHY	3				3	6	3	7,5	x
2v	TTT4150	NAVIGATION SYSTEMS	3				4	2	6	7,5	x
3h	TMR5210	CONTR SYST SPEC SUBJ	4	4	4	4				7,5	x
3h	TTK5100	GUID/NAV SYST SPEC	4	4	4	4				7,5	x
3h		Master Thesis								30,0	

Ex 1a = Term 1, Exam August
Ex 2h = Term 2, Exam Autumn
Ex 2v = Term 3, Exam Spring
Ex 3h = Term 3, Exam Autumn, the Master Thesis is to be submitted in February 2005.

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1) Can be replaced by the subject Calculus 4.
2) Select 2 of the subjects.
3) Select 1 of the subjects.
4) Select 1 of the subjects, so that the total weighting of the programme contains 120 credits (Cr.).

MSC-PROGRAMME IN MARINE TECHNOLOGY (MSN1)

Term 1 (May-July 2005)*
Term 2 and 3 (Autumn 2005 and Spring 2006)*
Term 4 (Autumn 2004 to February 2005)

NAUTICAL SCIENCE

Ex	Subject no.	Subject title	Note	Autumn F	Autumn Ø	Autumn S	Spring F	Spring Ø	Spring S	Cr	Exam
		Compulsory subjects:									
1a	TFY5100	CALCULUS 4		4	2	6				7,5	x
1a	TMR5150	MARINE DYNAMICS BC		3	6	3				7,5	x
1a	TMR5190	MARINE HYDRODYN BC		4	6	2				7,5	x
		Weighting compulsory courses		11	14	11				22,5	
		Compulsory subjects:									
2h	TMR4215	SEA LOADS		3	6	3				7,5	x
2h	TMR5230	NAUTICAL SCIENCE BC		3	6	3				7,5	x
2h	TTT4140	FUND OF NAVIGATION		4	2	6				7,5	x
2v	TMR5240	NAUTICAL SCIENCE AC					3	6	3	7,5	x
2v	TMR5250	NAUTICAL SC PROJECT						12		7,5	-
2v	TTT4150	NAVIGATION SYSTEMS					4	2	6	7,5	x
		Weighting compulsory courses		10	14	12	7	20	9	45,0	
		Optional subjects:									
2h	TMR4235	STOCH THEORY SEALOAD	1	3	6	3				7,5	x
2h	TMR5180	CONTROL ENGINEERING	1	3	6	3				7,5	x
2v	TMR4130	RISK ANALYSIS SAFETY	2				2	8	2	7,5	-
2v	TMR4220	NAVAL HYDRODYNAMICS	2				3	6	3	7,5	x
2v	TMR4225	MARINE OPERATIONS	2				3	6	3	7,5	x
2v	TMR4230	OCEANOGRAPHY	2				3	6	3	7,5	x
2v	TMR4240	MARINE CONTROL SYST	2				3	6	3	7,5	x
2v	TTK4190	GUIDANCE AND CONTROL	2				3	2	7	7,5	x
3h	TMR5260	NAUTIC SC SPEC SUBJ	3	4	4	4				7,5	x
3h		Master Thesis								30,0	

Ex 1a = Term 1, Exam August
Ex 2h = Term 2, Exam Autumn
Ex 2v = Term 3, Exam Spring
Ex 3h = Term 3, Exam Autumn, the Master Thesis is to be submitted in February 2005.

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1) Select 1 of the subjects..
2) Select 1 of the subjects.
3) The subject must be chosen so that the total weighting of the programme contains 120 credits (Cr.).