FSD3705 Dimensionering av snabba fartyg 6,0 hp

High-speed Craft Structural Design

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

Fastställande

Kursplan för FSD3705 gäller från och med VT09

Betygsskala

undefined

Utbildningsnivå

Forskarnivå

Särskild behörighet

SD2411 Lightweight Structures and FEM or similar. Students taking (or having taken) the course SD2416 Structural Optimisation and Sandwich Design and students following the Naval Architecture Master of Science Program have priority.

Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

The learning objectives are that you after finishing the course should be able to:
1) describe the functions of and interaction between the different hull structural components

in a high-speed craft structure,
2) describe the principal characteristics for different material concepts, such as sandwich, composite single skin and metals, and the differences in structural arrangement between different concepts,
3) describe the loads a high speed craft is subjected to,
4) describe background and principles for the semi-empirical methods for modelling of principal hydrodynamic characteristics for high-speed craft, and apply these methods to analyse running trim, running draught, drag, speed, and structural design loads,
5) apply basic structural mechanics such as beam and plate theory, to analyse high-speed craft structure components,
6) describe the purpose and principles of structure standard codes such as the classification society rules,
7) describe the different criteria which might rule the design of a high-speed craft structure,
8) make a preliminary structural design for a high-speed craft based on semi-empirical methods and classification rule requirements,
9) make complementary direct calculations on certain parts of a hull structure,
10) evaluate the efficiency of a structural design concerning for example ruling criteria, weight, building cost, maintenance cost, operational cost, and environmental influence.

Kursinnehåll

The course is problem based where you develop towards the learning objectives by working with design of the complete hull structure for a particular high-speed craft. All course participants work with the same craft but with different material concepts, e.g. sandwich, composite single skin, or metals. The design work is supported by a number of seminars, which treats the basic principles of lightweight structures in general and high speed craft hull structures in particular, modelling of the hydrodynamic performance for high-speed craft, design loads, design criteria, design methods and structural standard codes. The seminars are based on a number of articles and parts of the DNV High-Speed and Light Craft classification rules, and discussions around the progress of the structural design work. In the final seminar the different designs are presented, compared and evaluated.

Kurslitteratur

The course material is a number of technical articles, some parts of the DNV High-Speed and Light Craft classification rules.

Examination

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

Examination is done through active participation in the seminars, including literature reviews and other preparation and deliveries and a final report.

Etiskt förhållningssätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.