KURSPLAN
Parametric Design and GIS, 7,5 högskolepoäng

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Kurskod:	TPDR28	**Utbildningsnivå:**	Avancerad nivå
Fastställd av:	VD 2017-02-01	**Utbildningsområde:**	Tekniska området (95%) och samhällsvetenskapliga området (5%)
Reviderad av:	Utbildningschef 2021-10-27	**Ämnesgrupp:**	TE9
Gäller fr.o.m.:	2022-01-01	**Fördjupning:**	A1N
Version:	2	**Huvudområde:**	Produktutveckling

Lärandemål

After a successful course, the student shall

Kunskap och förståelse
- display knowledge of concepts and methods used when automating engineering design
- show familiarity with tools and analysis to structure design tasks and design knowledge

Färdighet och förmåga
- demonstrating the ability to write computer programs to automate simple engineering task
- demonstrating the ability to manipulate parameters and rules
- demonstrating the ability to structure design tasks and design knowledge
- demonstrating the ability to perform geospatial analysis using Geographic Information Systems (GIS) tools
- demonstrating the ability to develop simple database and to use SQL-commands

Värderingsförmåga och förhållningssätt
- demonstrating the ability to analyze a real design process to plan computer support and automation
- demonstrating the ability to recognize and manipulate parameters that influence the design process and results

Innehåll

The use of modern computing and information technology like BIM and GIS have changed not only the means, but also the design process used in the built environment sector. A deep comprehension of digital tools and the digital information managed along the process enhances a more efficient and productive process in terms of time and quality. This course aims to give the students basic knowledge and skills to automate engineering design activities through computer programming.

The course includes the following elements:
- Representation of knowledge and reasoning (Configuration, Parametric design, Generative

systems)
- Basic programming commands
- Functions
- Object oriented programming
- Graphical programming
- Event Handling
- API-programming
- Geospatial and energy analysis and simulations
- Database and SQL

Undervisningsformer

Lectures, exercises and assignments/project work.

Undervisningen bedrivs på engelska.

Förkunskapskrav

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in construction engineering or civil engineering, and 15 credits in mathematics, and completed course in Introduction to Script Programming, 7.5 credits, or equivalent. Proof of English proficiency is required.

Examination och betyg

Kursen bedöms med betygen 5, 4, 3 eller Underkänd .

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Examination[I]	3 hp	5/4/3/U
Övningsuppgifter/Projektarbete	4,5 hp	U/G

[I] Bestämmer kursens slutbetyg vilket utfärdas först när samtliga moment godkänts.

Kurslitteratur

The literature list for the course will be provided 8 weeks before the course starts.
Course literature consists mainly in scientific papers and web pages. All the needed literature is provided during the course and mainly in digital version.