Goals

The overall aims of the course are:

- To develop students' knowledge of current methods to produce steels and base metals from natural ores and recycled materials with focus on steel, which are most relevant for the Swedish steel industry. However, the production of aluminum and silicon is also discussed to exemplify the production other metal as well as other production concepts.
- To develop students' individual skills at performing relevant thermodynamic calculations for the extraction of base metals with focus on steel.
- To develop students' individual skills at interpreting the significance of the results of these calculations.

Teachers:	Pär Jönsson, parj@kth.se Andrey Karasev, karasev@kth.se Jesse Franklin White, jfwhite@kth.se
Assistants:	Josefin Mvele Svensson, jossven@kth.se
Course requirements:	Exam (TEN1), 4 p. Home assignment (ÖVN1: 2p) – Thermodynamic calculations
Literature:	Chapters on thermodynamic and ironmaking, steelmaking, ladle refining, production of aluminum and silicon are available on the canvas system.
Period:	1
Exam:	October 29, 8.00-13.00, Written exam
Re-Exam:	December 21, 14.00-19.00, Written exam

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Lecture and exercise schedule

30/8	10.15-12.00	Class	Course introduction. L1. Extractive metallurgy	– Andrey Karasev
01/9	13.15-15.00	Class	L2. Basic thermodynamic. Enthalpy, Entropy, Gibbs Energy	– Jesse White
02/9	08.15-10.00	Class	L3. Basic thermodynamic. Chemical Reaction Equilibria	– Jesse White
06/9	10.15-12.00	Class	L4. Basic thermodynamic. Phase Equilibria	– Jesse White
08/9	13.15-15.00	Class	E1. Recitation, exercises	– Jesse White
09/9	08.15-10.00	Class	E2. Recitation, exercises	– Jesse White
13/9	10.15-12.00	Class	L5. Blast furnace metallurgy	– Andrey Karasev
15/9	13.15-15.00	Class	L6. Sulfur removal from iron. Converter metallurgy	– Andrey Karasev
16/9	08.15-10.00	Class	E3. Recitation, exercises	– Josefin Svensson
21/9	10.15-12.00	Class	L7. Electric arc furnace metallurgy	– Andrey Karasev
22/9	13.15-15.00	Class	L8. Ladle metallurgy	– Andrey Karasev
28/9	10.15-12.00	Class	L9. Ladle metallurgy and casting	– Andrey Karasev
29/9	13.15-15.00	Class	E4. Recitation, exercises	– Josefin Svensson
04/10	13.00-15.00	Class	E5. Recitation, exercises	– Josefin Svensson
06.10	13.15-15.00	Class	L10. Production of aluminium and silicon - Pär Jönsson	
12.10	10.15-12.00	Class	E6. Recitation, exercises	– Josefin Svensson
13/10	13.15-15.00	Class	L11. Summary. Example of exam	– Andrey Karasev
29/10	08.00-13.00	U61	Examination	
21.12	14.00-19.00	D35	Re-examination	