

## **Ekoteknik och miljövetenskap, forskarutbildningskurs, 7,5 hp**

### **1. Allmänna data om kursen**

Kursens benämning översatt till engelska: Research literature in Ecotechnology and environmental Science for PhD-students

Kurskod:

Nivå: Forskarutbildningskurs

Ansvarig institution: Institutionen för teknik, fysik och media

Ämne: Ekoteknik och miljövetenskap

Utbildningsområde: **Teknik**

### **2. Beslut om fastställande**

### **3. Kursens mål**

Kursens mål är att ge en bred kunskap och kompetens inom det valda forskningsämnesområdet samt särskild fördjupning inom det valda forskarutbildningsproblemet.

### **4. Kursens innehåll**

Kursen är en litteraturkurs som innebär inläsning av fastställd forskarutbildningslitteratur inom ramen för forskningsuppgiften.

### **5. Förkunskapskrav**

För tillträde till kursen krävs att studenten är antagen till forskarutbildning i ekoteknik och miljövetenskap.

### **6. Urvalsregler**

Urval till kursen sker i enlighet med Högskoleförordningen och Mittuniversitetet antagningsordning.

### **7. Undervisningens uppläggning**

Undervisningen bedrivs genom självständig inläsning av fastställd forskarutbildningslitteratur. Vid tillfällen då flera studenter samtidigt studerar kursen kan seminarier förekomma.

### **8. Examination**

Skriftlig eller muntlig tentamen. Vid förekomst av seminarier sker delar av kunskapsredovisningen genom aktivt deltagande i seminarierna. På forskarutbildningskurser ges något av betygen Godkänd (G) eller Underkänd (U).

### **9. Kurslitteratur**

#### **List of literature:**

1. Gustavsson, L. and Joelsson, A., 2007. Energy conservation and conversion of electrical heating systems in detached houses . *Energy and Buildings*, Vol 39 (6), p 716-726
2. Gustavsson, L and Näslund, L., Cost of collection, processing and transportation of forest residues and CO<sub>2</sub> benefits of fossil fuel replacement
3. Holmberg, J., Gustavsson, L. 2007. Biomass use in chemical and mechanical pulping with biomass-based energy supply. *Resources, Conservation and Recycling* (In press).

4. Holmberg, J., Gustavsson, L. CO<sub>2</sub> and oil use reduction by implementation of black liquor gasification and energy efficiency in pulp and paper industry (*submitted to Resources, Conservation and Recycling, 2007*)
5. Joelsson, A., Gustavsson, L., 2007. Conversion of fossil-fuel-based boiler systems in detached houses. *Submitted to Buildings and Environment, in review process.*
6. Joelsson, A. and Gustavsson, L. 2007. District heating and energy conservation in detached houses of differing size and construction. *Submitted to 3<sup>rd</sup> International Green Energy Conference. Västerås, Sweden, for publication in journal.*
7. Joelsson, A. and Gustavsson, L. 2007. Perspectives on implementing energy efficiency in existing Swedish detached houses. *Energy Policy* (In press 2007)
8. Näslund, L., Gustavsson, L. 2007. Comparative analysis of wood chips and bundles - costs, carbon dioxide emissions, dry-matter losses and allergic reactions; *Biomass and Bioenergy* (In press).
9. Näslund, L., Comparative analyses of wood chips, bundles and pellets in a life cycle perspective with a focus on transport systems; (*Submitted to Resources, Conservation and Recycling, 2006*).
10. Näslund, L., Gustavsson, L. Biofuels from stumps and small roundwood - costs and CO<sub>2</sub> benefits (*Submitted to Biomass and Bioenergy, 2006*).
11. Mahapatra, K and Gustavsson, L. 2007. Influencing Swedish house owners to adopt district heating system (Journal Manuscript).
12. Mahapatra, K and Gustavsson, L. Multi-storey wooden buildings – breaking path dependency in the Swedish construction sector (Journal Manuscript).
13. Mahapatra, K. and Gustavsson, L. An adopter-centric approach to analyze the diffusion patterns of innovative residential heating systems in Sweden, *Energy Policy* (Forthcoming).
14. Mahapatra, K and Gustavsson, L., 2007. Innovative approaches to domestic heating: homeowners' perceptions and factors influencing their choice of heating system, *International Journal of Consumer Studies* (Forthcoming).
15. Mahapatra, K., Gustavsson, L. and Madlener, R., 2007. Bioenergy innovations: the case of wood pellet systems in Sweden, *Technology Analysis and Strategic Management*, 19(1): 99-125.
16. Mahapatra, K and Gustavsson, L., 2007. Diffusion of innovative heating systems in Swedish detached houses, *International Journal of Energy Technology and Policy* (Forthcoming).
17. Gustavsson, L., Dornburg, V., Holmberg, J., Sathre, R., Eggers, T., Mahapatra, K., Marland, G., 2007. Using biomass for climate change mitigation and oil reduction, *Energy Policy*, 35(11): 5671-5691.

18. Eriksson, E., Gillespie, A., Gustavsson, L., Langvall, O., Olsson, M., Sathre, R. and Stendahl, J., 2007. Integrated carbon analysis of forest management practices and wood substitution. *Canadian Journal of Forest Research*, 37(3): 671-681.
19. Gustavsson, L., Holmberg, J., Dornburg, V., Sathre, R., Eggers, T., Mahapatra, K. and Marland, G. Using biomass for climate change mitigation and oil use reduction. *Energy Policy* (In press, 2007).
20. Gustavsson, L., Madlener, R., Hoen, H.-F., Jungmeier, G., Karjalainen, T., Klöhn, S., Mahapatra, K., Pohjola, J., Solberg, B. and Spelter, H., 2006. The role of wood material for greenhouse gas mitigation, Mitigation and Adaptation Strategies for Global Change, 11(5/6): 1097-1127.
21. Gustavsson, L., Pingoud, K. and Sathre, R. 2006. Carbon dioxide balance of wood substitution: comparing concrete- and wood-framed buildings. *Mitigation and Adaptation Strategies for Global Change*, 11(3): 667-691.
22. Gustavsson, L. and Sathre, R. 2006. Variability in energy and carbon dioxide balances of wood and concrete building materials. *Building and Environment*, 41(7): 940-951.
23. Sathre, R. and Gustavsson, L. 2007. Effects of energy and carbon taxes on building material competitiveness. *Energy and Buildings*, 39(4): 488-494
24. Sathre, R. and Gustavsson, L. 2007. Process-based analysis of added value in forest product industries. (*Submitted to Forest Policy and Economics 2007*)
25. Sathre, R. and Gustavsson, L. 2006. Energy and carbon balances of wood cascade chains. *Resources, Conservation and Recycling*, 47(4): 332-355.
26. Nassen, J. and Holmberg, J., 2005. Energy efficiency – a forgotten goal in the Swedish building sector? *Energy Policy*, 33(8): 1037-1051.
27. Nassen, J. Sprei F. and Holmberg, J., 2007. Stagnating energy efficiency in the Swedish building sector – economics and organisational explanations, Submitted for publication in *Energy Policy*.
28. Nassen, J., Holmberg, J., Wadeskog, A., Nyman, M., 2007. Direct and indirect energy use and carbon emissions in the production phase of buildings: An input-output analysis, *Energy*, 32(9): 1593-1602.
29. Nassen, J. and Holmberg, J., 2007. Quantifying the rebound effects of energy efficiency and energy conserving behaviour in Sweden, submitted for publication in *Energy Efficiency*.
30. Nassen, J. and Holmberg, J., 2007. On the potential trade-offs between energy supply and end-use technologies for residential heating, Working paper.

And 5 additional articles of participant's choice