



# BB2520 Bioprocessdesign 15,0 hp

## Bioprocess Design

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

## Fastställande

Kursplan för BB2520 gäller från och med HT11

## Betygsskala

A, B, C, D, E, FX, F

## Utbildningsnivå

Avancerad nivå

## Huvudområden

Bioteknik, Kemiteknik

## Särskild behörighet

At least 150 credits from grades 1, 2 and 3 of which at least 100 credits from years 1 and 2, and a degree project, first level, must be completed.

The 150 credits should include a minimum of 20 credits within the fields of Mathematics, Numerical Analysis and Computer Sciences, 5 of these must be within the fields of Numerical Analysis and Computer Sciences, 20 credits of Chemistry, possibly including courses in Chemical Measuring Techniques and 20 credits of Biotechnology or Molecular Biology.

# Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

## Lärandemål

The course has the goal to give both practical and theoretical understanding of the elements of taking a bioproduct from the discovery stage to successful pilot scale production according to a desired output with respect to product quantity, quality and process documentation. The goal is further to perform the project in close relationship to actual industrial working methodology i.e. the project is managed and operated in a project group format and theoretical lectures are only used to give the background to a selected range of techniques.

## Kursinnehåll

Cultivation technology (continuous and fedbatch cultivation, medium design, scale-up of bioprocesses, process rheology), downstream processing, project management, industrial management and organisation, Matlab modelling and simulation (cultivation), factorial design for process development, small and pilot scale production, process documentation.

## Kursupplägg

- Matlab modeling and simulation of a fedbatch process
- Deriving of modeling constants through use of continuous cultivation
- Use of a Matlab model for continuous cultivation start-up
- Product optimisation using software for factorial design (parameters: feed profile, pH, temp and point of induction)
- Medium design
- Scale up of bioprocesses
- Process rheology impact on production
- Small and pilot scale bioreactor set-up and operation
- Economy overview calculation
- Process documentation methodology (industrial concept)
- Project planning management; theory and practice
- Design of the down stream operations

## Kurslitteratur

Compendium, selected articles.

## Examination

- PRO1 - Projektplanering del 1, 2,0 hp, betygsskala: P, F
- PRO2 - Projektplanering del 2, 4,0 hp, betygsskala: P, F
- REP1 - Slutrapport, 9,0 hp, betygsskala: A, B, C, D, E, FX, F

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.

Part 1 (project plan 1). Individual. Mandatory. P/F. 2 credits.

Part 2 (project plan 2). Individual. Mandatory. P/F. 4 credits.

Report: Process documentation. Individual. Mandatory. A-F. 9 credits.

## 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.