



# FBB3650 Animalcellsteknologi

## 7,5 hp

Animal Cell Technology

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

### Fastställande

Kursplan för FBB3650 gäller från och med VT18

### Betygsskala

### Utbildningsnivå

Forskarnivå

### Särskild behörighet

The KTH course  
BB1120 Cultivation technology **or**  
BB2080 Bioprocess Technology **or** equivalent.

### Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

### Lärandemål

The students will learn how to design a cultivation process to produce a biopharmaceutical drug protein. In particular, after the course, they will be able to

- design a cultivation process flow sheet of operations
- select an appropriate cell line
- choose an expression system
- design a cultivation process fit for industrial purpose, i.e. integrating scale-up constraints, Good Manufacturing Practice (GMP), manufacturing operation
- select the level of safety required for the patients and design a process accordingly
- be able to design a strategy to develop a cultivation process

## Kursinnehåll

- Introduction to processes for the manufacturing of biopharmaceuticals. • Introduction to animal cell based cultivation process and relations/interactions between cultivation and other steps of the biopharmaceutical process.
- Usage of stable expression systems and description of the existing systems, e.g. cell lines.
- Review of cell metabolism relevant for the animal cell cultivation and application to process design. Scale-up aspects.
- Issues of commercial production, e.g. requirements of patient safety and compliance to regulatory constraints.
- Integration of the different course materials into development and design of a cultivation process.
- Cells as product
- Basic techniques for mammalian cell culture in shake flask, and small-scale fed-batch bioreactor operations

## Kursupplägg

- 12 lectures (2 x 45 min) accompanied by peer review and discussion of home assignments of other students
  - 12 home assignments (e.g. literature searching and reading). Efforts with home assignments will be about 5 hours/week.
  - Practical training of sterile techniques to culture mammalian cells in shake flask (5 days) and performance of a fed-batch bioreactor culture as demonstrator in groups (5 days)
- Lectures are given during daytime at KTH. Total weekly attendance is 4 x 45 min. Total course duration is 8 weeks. The course includes a final report.

## Kurslitteratur

- Handout material
- Butler M ed. (2007) "Cell Culture and Upstream Processing" Taylor and Francis ISBN 0-415-39969-6
- Ozturk S and Hu W-S (2006) "Cell Culture Technology for Pharmaceutical and Cell-based Therapies" Taylor and Francis ISBN 0-8247-5334-8

## 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.

## Övriga krav för slutbetyg

- (1) > 50 % attendance at lectures, **and**
- (2) Score > 60 % of max points at written examination, **and**
- (3) > 80 % of home assignments approved

## 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.