



sartorius stedim  
biotech

## Training Courses 2019 Southeast Asia



turning science into solutions

Our application-centered training courses are designed for Sartorius customers who work in research and development, production and quality assurance.

The theoretical part will help you better understand the background on your application and Sartorius products. In the practical part, you will work intensively in small groups so you can apply directly what you have just learned and quickly assimilate procedural methods.

Our approach is solution- and process-oriented to accommodate your routine work. Your procedural steps and processes will be simplified; you will gain confidence in performing procedures while increasing job satisfaction. One nice side effect: you'll get new contacts and can share experiences with other colleagues in your field.

"The only person who is educated is the one who has learned how to learn ... and change."

Carl Rogers



**Welcome to our training program 2019.**

You can choose from a broad range of training courses and seminars in the following areas:

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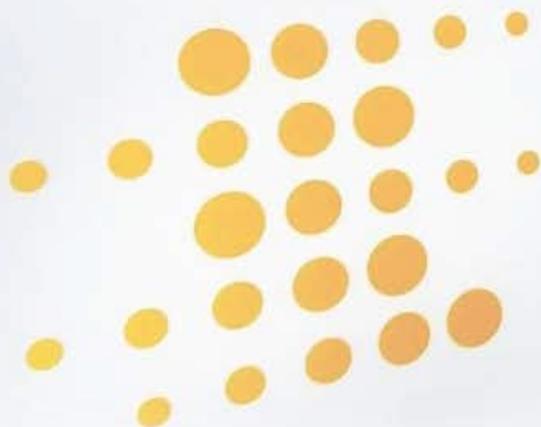
Single-Use Process Systems ..... page 8

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Our training courses focus on methodology. They are open to all interested parties and give you objective and unbiased perspectives.

It is our hope that the time you spend with us will be an excellent experience for you. We have put together these training courses in order to better enable you to meet your training objectives.



**sartorius**

# Overview of Our Training Courses

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# Fermentation | Cell Culture Technologies

## Basics of Fermentation

**Who should attend:** Technicians and scientists without any or basic practical knowledge or cultivation of microorganisms or cell culture

**Course Date | Venue:**  
21 - 22 March 2019  
Singapore Polytechnic

This course gives you an overview about the fundamentals of fermentation including typical applications, organisms, fermentation techniques and process control. The theoretical and practical knowledge will help you better understand your own fermentation processes and to apply fermentation knowledge for the operation of bioreactor equipment

**Course Duration:**  
2 Days

Start First Day: 10:00am  
End Last Day: 5:00pm

**This course covers:**

- Chemical and biological principles of fermentation
- Organisms and expression systems used for production
- Basics principles of bioreactor technologies:
  - what is a bioreactor, design of bioreactors and operations
- Different fermentation modes (batch, fed-batch, continuous fermentation)
- Basic principles of process control: sensors and automation
- Performing experiments (model solution) on bioreactor

**Trainer:**

Application | Training Specialist

**Course Fee:**

Please contact your local representative



# Downstream Processing

## Use of Crossflow Filtration in DSP (Module 1)

**Who should attend:** Technicians and scientists with or without previous knowledge in the field of crossflow filtration.

This course is designed to provide you with knowledge about the use of crossflow filtration in the biopharmaceutical industry. It consists of two different modules, which can be booked separately.

Module 1 focuses on the fundamentals of crossflow filtration and to apply crossflow filtration knowledge for concentration and diafiltration.

### Theoretical aspects include:

- Crossflow filtration theory
- Membrane characterization | membrane selection
- Factors influencing performance
- Operating conditions
- Cleaning-in-place (CIP)
- Applications in biotechnology

### Practical exercises:

- Operational set-up of the systems
- Determination of clean water flux
- Cell retention by microfiltration (model solution)
- Concentration of a protein solution by ultrafiltration
- Removal of low-molecular weight contaminants by diafiltration
- Cleaning

**Course Date | Venue:**

19 - 20 June 2019

Singapore Polytechnic

**Course Duration:**

2 Days

Start First Day: 10:00am

End Last Day: 5:00pm

**Trainer:**

Application | Training Specialist

**Course Fee:**

Please contact your local representative

B1

Downstream Processing



# Downstream Processing

## Use of Crossflow Filtration in DSP (Module 2)

**Who should attend:** Technicians and scientists with basic knowledge in the field of crossflow filtration.

Module 2 focuses on aspects of integrity testing of crossflow cassettes and efficient product recovery.

**Theoretical aspects include:**

- Scale-up
- Integrity testing
- Optimal recovery process: Harvesting of product and draining of the system after filtration
- Multi-use vs. single-use
- Use of cassettes and holders of different suppliers

**Practical exercises:**

- Integrity testing
- Efficient harvesting and draining of system

**Course Date | Venue:**  
21 June 2019  
Singapore Polytechnic

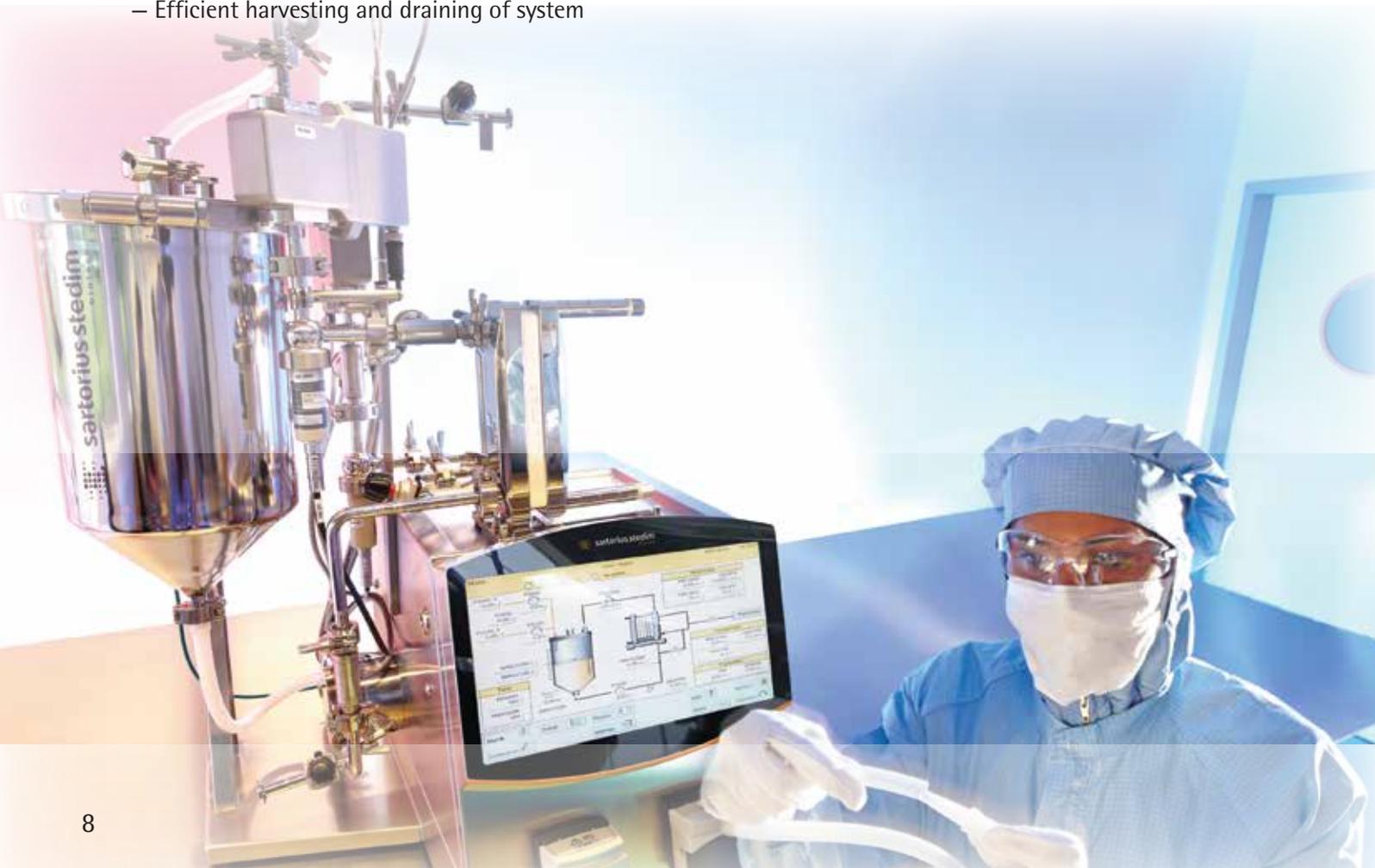
**Course Duration:**  
1 Day

**Start First Day: 10:00am**  
**End Last Day: 5:00pm**

**Trainer:**  
Application | Training Specialist

**Course Fee:**  
Please contact your local representative

B<sub>2</sub>  
Downstream Processing



# Single-Use Process Systems

## Single-Use Technologies

**Who should attend:** Technical staff with limited experience with single-use systems and consumables..

Establishing a new production process requires high initial cost and can take years to set up. At each step, from biosynthesis to formulation, materials must be validated to eliminate contamination risks.

Single-use technologies eliminate cleaning validation steps, reduce significant time and cost, provide higher flexibility and reliability.

### Theoretical aspects and practical exercises:

- Bag assemblies: bag types and material, design options and handling (bag unpacking & insertion into tanks)
- Mixing technology and efficiency: magnetically coupled vs. levitated impeller
- Sensor technology (types, location, calibration, accuracy)
- Integrity testing of filters and bag leakage testing in single use systems
- Aseptic connections and disconnections of tubing
- Aseptic transfer of product across cleanroom barriers

**Course Date | Venue:**

19 - 20 September 2019

Singapore Polytechnic

**Course Duration:**

2 Days

**Start First Day:** 10:00am

**End Last Day:** 5:00pm

**Trainer:**

Application | Training Specialist

**Course Fee:**

Please contact your local representative



# Filtration

## Basics of Filters and Integrity Test

**Who should attend:** Technicians and scientists with little or no previous knowledge in the field of filtration.

In this training course, you will acquire the necessary knowledge and practical skills in handling the filters employed for sterilizing filtration.

### Theoretical aspects include:

- Basic principles of filtration
  - Depth filters | membrane filters
  - Hydrophobic | hydrophilic filters
  - Retention mechanisms
- Integrity testing of membrane filters
  - Regulatory requirements
  - Integrity test methods
- Physical principles of the steam sterilization of filter lines

### Practical exercises:

- Manual determination of bubble point | diffusion
- Automated integrity testing
  - Bubble point test | diffusion test
  - Integrity testing of hydrophobic filters using the water intrusion test (WIT)
- Trouble shooting

**Course Date | Venue:**

04 - 05 December 2019

Singapore Polytechnic

**Course Duration:**

2 Days

**Start First Day:** 10:00am

**End Last Day:** 5:00pm

**Trainer:**

Application | Training Specialist

**Course Fee:**

Please contact your local representative



# Software

## Multivariate Data Analysis

**Who should attend:** Researchers, scientists and engineers working with collection and interpretation of data.

Using the latest multivariate techniques, participants will learn how to interpret complex data quickly and confidently. Discover the secrets of overviewing data tables and also learn how to build robust predictive models that turn data into decisions. The course is composed of lectures, software demonstrations and computer exercises in software SIMCA, based on real-life datasets.

**Course Objectives:** To show how to convert data tables to robust and reliable models and figures that can be easily interpreted and overviewed.

**Topics include:**

- Organization, visualization and treatment of different types of data
- Multivariate data modeling and diagnostics
- Understanding PCA, PLS and OPLS
- Model interpretation
- Possibilities for on-line process monitoring

**Course Date | Venue:**

14 -15 March 2019

04 - 05 June 2019

05-06 September 2019

Also available on request  
Sartorius Office, Singapore

**Course Duration:**

2 Days

Start First Day: 9:00am

End Last Day: 5:00pm

**Trainer:**

David Wang

**Course Fee:**

Please contact your local representative

**Condition:**

You are required to bring your own computer for the exercises

E1

Software



# Software

## Design of Experiments (DOE)

**Who should attend:** Researchers, scientists and engineers from all sectors of industry and academia.

Typical applications include product development, process improvement, optimization, validation and quality control. No prior knowledge of statistics is assumed.

Design of Experiments (DOE) is the most effective method to achieve product and process efficiency and optimization. MODDE is a state-of-the-art design of experiments software package that is used by scientists, engineers, and statisticians alike to help understand complex processes and products.

### Course Objectives:

On completion, participants will know how to:

- Create efficient experimental designs to match the objectives
- Analyze experimental data using sound statistical principles
- Use graphical and statistical tools for understanding
- Communicate the results in graphical format
- Use numerical and graphical optimization tools
- Understand limitations and possibilities in conflict situations
- Create follow up experiments when applicable

### Topics include

- Understanding the DOE concept
- Data modeling and diagnostics
- Create a solid base for decisions
- Finding the optimal setting

### Course Date | Venue:

11-12 March 2019

06 - 07 June 2019

03 - 04 September 2019

Also available on request

Sartorius Office, Singapore

### Course Duration:

2 Days

Start First Day: 9:00am

End Last Day: 5:00pm

### Trainer:

David Wang

### Course Fee:

Please contact your local representative

### Condition:

You are required to bring your own computer for the exercises

# Sartorius Lab Academy

## Customized Training for Laboratory Professionals

In addition to our detailed intensive training program, Sartorius also offers concise and targeted training sessions at your company, called Lab Academy. These sessions are ideally suited to get an overview about specific applications and to enhance the efficiency of your workflows. Our experts provide a high percentage of hands-on training to extend your techniques and to give you valuable advice and tips for your daily work and challenges.

Choose from several course topics about lab water purification systems, pipettes, filtration and balances.

### What you can expect:

- Professional training that combines theory and practice
- Theoretical part for increasing background knowledge and gaining industry updates
- Hands-on session to put theory into practice and rehearse work situations
- Extensive course material provided for later reference

### Your advantages:

- Individual knowledge - Custom-tailored to your requirements and routine procedures
- Industry updates about the most recent changes to the relevant standards and regulations and about trends
- Solutions for common problems based on actual work situations and challenges
- First-hand tips from knowledgeable and experienced experts to facilitate your daily work

### The Program

- Sartorius | Pipetting Academy
- Sartorius | Weighing Academy

For more information or to register for a training session,

contact

[caryn.chai@sartorius.com](mailto:caryn.chai@sartorius.com)

# Trainers

**Sherwin Ting** is responsible for the fermentation business of Southeast Asia, focusing on product proposals and application support. Prior to joining Sartorius, Sherwin was in the R&D industry for 8 years, focusing on upstream process development for stem cells. Sherwin has completed his Bachelor Degree in Biomedical Engineering from Boston University, United States.

**Eileen Sim** graduated from University of Queensland, Australia with Bachelor of Biotechnology (IIA). Prior to joining Sartorius, Eileen was in the R&D industry for 7 years, focusing on upstream process development for stem cells and also vaccine development.

In her current role, her primary responsibility will be to develop FRT business in South East Asia focusing on product proposals and application support.

**Vicky Neo** is responsible for the purification business of Southeast Asia. Prior to joining Sartorius, Vicky worked at Lonza (UK and Singapore) for 5 years in both Development Services and Manufacturing divisions. Her specialties include downstream process optimisation for scale up, membrane chromatography, technology transfer across sites and process improvement projects. She has an Honor's Degree in Chemistry and Biological Chemistry.

**Lucas Loy** graduated from Nanyang Technological University, Singapore, with a Bachelor Degree in Biological Sciences. Prior to joining Sartorius, he worked in Amgen for 4 years and took part in the tech transfers of 2 molecules from Amgen US to Singapore and was the Process Lead for Bulk Drug Filling and Harvest process. In his current position with Sartorius, Lucas aims to help emerging and existing biopharma companies to integrate single-use technologies into their processes.



# Trainers

**Tan Ming Wei** is responsible for the filtration business within SEA, providing filter related training & technical support, identifying opportunities for filtration optimization and streamlining of processes. He started off his career at Baxter Bioscience as a Biotechnologist in Upstream Cell Culture | Media Prep | Inoculation.

Over the years, Ming Wei progresses to a Process Engineer, involved largely in tech transfer and critical investigation relating to product quality and product yield.

**Caryn Chai** completed her Bachelor Degree in Biomedical Science from University of Western Australia. Prior to joining Sartorius, Caryn was in the R&D industry for 10 years, focusing on cancer science and cardiovascular disease, with the goal of identifying novel targets for therapeutic intervention.

Caryn is a ACTA certified trainer.

**David Wang** is a Principal Data Scientist at Sartorius-Stedim Data Analytics based in Singapore. He mainly works on improving efficiency, optimality, and profitability for product development, process development, and manufacturing processes by applying advanced data analytics technology, where the work is focused on data-driven modelling, process monitoring, advanced process control, design of experiments, PAT and QbD. He has delivered a large number of data analytics training courses and industry projects across Asia-Pacific region.



# Inhouse Training

We'll be happy to hold any of our on-going training courses and seminars inhouse at your own facilities. Of course, we can also put together complete new training courses for you! Let us know how we can help you to develop and implement a training concept that is right for you.

**The benefits of our inhouse training include:**

1. You get personalized training courses – designed according to your wishes and tailored to meet your needs.
2. You choose the dates and times for your training courses and seminars that suit.
3. A group of several colleagues can take part in the courses – all at the same time, without any added travel expenses.
4. The courses will be held using your own equipment and materials (e.g. cell lines). The knowledge gained can be put right into practice – on site!

## Training Laboratories



# Registration



## Course Participant:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Institute | Company

\_\_\_\_\_  
Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Email

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Singapore Polytechnic  
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## Invoice Address (if different from the one above):

\_\_\_\_\_  
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Email caryn.chai@sartorius.com

## Invoice Address (if different from the one above):

\_\_\_\_\_  
Name

\_\_\_\_\_  
Institute | Company

\_\_\_\_\_  
Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State

## Areas of Interest | Questions | Remarks

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Date | Signature

Registration

# Information on How to Register

Registration is subject to our General Terms and Conditions of Business.

## Registration

Registrations must be submitted in writing. A written confirmation of the booking will follow. The fees will be invoiced after completion of the seminar.

## Cancellations

Cancellations will be accepted if made in writing up to 30 workdays prior to the beginning of the course. After this time, the course fee is payable in full. However, registered participants always have the option to appoint a substitute to attend.

## Changing the Scope of Services

We reserve the right to change the content and schedule of the seminar and the trainer while preserving the overall nature of the seminar.

We reserve the right to cancel the seminar or to offer an alternative date. If we cancel the seminar due to illness of the trainer, acts of God, or other adventitious events, the registrants have no claim to having the seminar conducted.

## Copyrights

Seminar materials and folders are governed by copyright laws and under no circumstances and at no time may they be reproduced by photographic or electronic means. These materials are intended for the sole personal use of the course participants.

# 2019 Training Calendar

January

February

March

11 - 12 March  
Design of Experiments (DOE)

14 - 15 March  
Multivariate Data Analysis

14 - 15 March  
Basics of Fermentation

April

May

June

04 - 05 June  
Multivariate Data Analysis

06 - 07 June  
Design of Experiments (DOE)

19 - 20 June  
Crossflow Filtration (Module 1)

21 June  
Crossflow Filtration (Module 2)

July

August

September

03 - 04 September  
Design of Experiments (DOE)

05 - 06 September  
Multivariate Data Analysis

19 - 20 September  
Single-Use Technologies

October

November

December

04 - 05 December  
Basics of Filters and Integrity Testing

# Sales and Service Contacts

For further contacts, visit [www.sartorius.com](http://www.sartorius.com)

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