



BioTechDelft
POSTGRADUATE EDUCATION

Year report 2020

BioTech Delft
Foundation Biotechnology Academy Delft



Preface

2020 was in all aspect a special year with serious setbacks and losses for so many. The Foundation Biotechnology Academy Delft (BioTech Delft) was also effected and had to cancel 4 of their 7 planned courses and postponed 2. Microbial Physiology and Fermentation Technology was successfully completed in January 2020 before the increasing restrictions forced us to find other ways to give our courses. With joint efforts of many we succeeded in providing a hybrid course on Bioprocess Design in the period of relaxed restrictions in September and we organised the Biocatalysis course in November early December fully online. Thank you very much courses leaders Sef Heijnen (2x!) , Han de Winde, Henk Noorman, Ruud Weusthuis, Ulf Haneveld, Adrie Straathof, Frank Hollmann and Carline Paul, you scored very high in spite of the adaptations!

We used our creativity and developed our knowledge in online options in various forms for our regular courses, which provides thought for food for the future and helps us to become flexible and robust to achieve our mission to become the world standard in offering courses in biotechnology.

As a (part) alternative for cancelled courses Biotech Delft supported this year two runnings (the 7th and 8th edition) of the TU Delft Massive Open Online-Course (MOOC) on Industrial Biotechnology and the 3rd run of the joint MOOC Biobased Products for a Sustainable Bioeconomy, developed together with universities in Ghent, Aachen, Wageningen and CLIB2021 in Germany. Due to the COVID-19 restriction the courses received good attendance of respectively 5948 and 3173 participants in 2020. In addition BTD helped to develop a short MOOC based on a calculator developed in an EU project to show European scenarios for climate change mitigation. The "EUCalc Pathway finder to a low carbon EU-society" and the other two MOOCs are a valuable complement to our intensive advanced courses.

From here I like to thank Vincent, Jenifer and Ilnaat for their continued commitment and input, realising the efficient organisation of all our activities. This year also a great thank you to all those who made it possible to run a 1,5 meter distance course at the Botanical Garden, Sjaak Lispet and colleagues: thank you! Together you made it a great experience for participants again. Thank you Biotech team!

On behalf of the board I wish all a pleasant read of the annual report 2020 and hope we can return to more normal courses in 2021!

Prof.dr. Patricia Osseweijer – treasurer

Content

Preface.....	- 3 -
Content.....	- 4 -
1. Summary.....	- 5 -
2. BioTech Delft in 2020	- 7 -
2.1 General	- 7 -
2.2 Strategy and goals.....	- 7 -
2.3 Organisational changes	- 8 -
3. Results 2020.....	- 8 -
3.1 Advanced Courses	- 9 -
3.2 Quality of the Advanced Courses	- 11 -
3.3 Promotion of the Advanced Courses.....	- 11 -
3.4 Online course Industrial Biotechnology.....	- 18 -
3.5 Synergy with the department of Biotechnology.....	- 18 -
4. Organisation	- 19 -
4.1 Employees of Foundation BioTech Delft	- 19 -
4.2 Board of BioTech Delft	- 19 -
4.3 Contact information	- 19 -
5. Acknowledgment	- 20 -

1. Summary

2020 was characterized by the COVID-19 pandemic. We planned to organise seven courses, but we had to postpone 2 of them and cancel 4. We shifted to enable online education and organised a total of 3 courses this year:

- Bioprocess Design (joint course with Wageningen University & Research) (for part of the participants online)
- Biocatalyses and Protein Engineering (online)
- Microbial Physiology and Fermentation Technology (just before COVID-19 restrictions)

We had an total of 75 participants (average of 25 per course). The participants appreciated the courses very well with on average a score of 4.4 out of 5 for content and 4.7 out of 5 for organisation.

We thank our partners (Wageningen University & Research) and the Biotech Campus Delft, all lecturers and participants for this cooperative and successful year!



1.5m setup during AC BD



Running the AC BC course online



Prize winning team during AC BD



Zoom session during AC BC



AC MPFT participants



AC MPFT during 'van Leeuwenhoek/Delft' history tour

2. BioTech Delft in 2020

2.1 General

The foundation "Biotechnology Academy Delft" (short: BioTech Delft) manages the external courses given by the department of Biotechnology at the Delft University of Technology. Our aim is to stimulate high-level education activities, that become the world 'standard' in their specific biotechnology field. Our activities are aimed at scientists and engineers studying for an advanced degree (PhD or PDEng) and/or working at universities and industries.

In our courses we invite a wide variety of influential, international lecturers from universities and industries who present their vision on biotechnology and share their expert knowledge and expertise. Our Advanced Courses are short, in-depth courses, which are full-time and delivered in a timespan of either one or two weeks.

Our current portfolio consists of seven Advanced Courses; five are organised annually, two every other year:

Annually:

- Bioprocess Design (in partnership with Wageningen University & Research)
- Downstream Processing
- Environmental Biotechnology
- Microbial Physiology and Fermentation Technology
- Multiscale Computational Methods in Bioprocesses

Every other year:

- Biocatalysis and Protein Engineering
- Integrated Multi-Omics approaches for Improvement of Industrial Microbes)

In 2020 we organised the courses Microbial Physiology and Fermentation Technology, Bioprocess Design and Biocatalysis and Protein Engineering. Less than in a normal year, due to the COVID-19 pandemic.

2.2 Strategy and goals

BioTech Delft portfolio of courses has a strong international reputation. To maintain this worldwide reputation and relevance, we seek to continuously improve and adapt our course portfolio. In March 2020, the COVID-19 pandemic hit the world, therefore most goals were not fully achieved. Instead we shifted to explore and develop more online possibilities.

Below, we briefly discuss progress in relation to targets specified for 2020.

- explore options to increase on-line abilities by recording some lectures during Advanced Courses and by making short courses together with our teachers.

Due to the COVID-19 pandemic we have organised one course in a hybride form (part of the participants on site, part of them online) and one course fully online. Both were very highly rewarded, as can be seen in this report. Furthermore we have recorded 7 lectures for the scale up/scale down course, for later use.

- invest more in online communication (e.g. via our website) regarding the BioTech Delft's developments to improve alumni involvement.

We see we have a growing public on LinkedIn (e.g. our BioTech Delft webpage on LinkedIn has now 341 followers). We advertised with our courses via LinkedIn and we started sharing more news via our website.

2.3 Organisational changes

As we and the department of Biotechnology are working more together with the Biotech Campus Delft, we formalised that with the addition of another board member on behalf of the Campus: Cindy Gerhardt, director of Planet B.io.

3. Results 2020

This year was very different than other years. We had to postpone two courses (Bioprocess Design, Biocatalyses and Protein Engineering) until later in the year and cancel four (Environmental Biotechnology, Downstream Processing, Integrated Multi-Omics approaches for Improvement of Industrial Microbes and Modelling and Computation for Micro-organisms in Bioprocesses).

In total we had 75 participants in our 3 courses. On average we had 25 participants per course, who scored us on a scale from 1 to 5 a 4.4 for content and a 4.7 for organisation.

Bioprocess Design course was organised in a hybride form, having both on site participants as well as online, and at the botanical garden to be able to maintain the 1,5m social-distancing. The course Biocatalyses and Protein Engineering was organised fully online.

As every year, Advanced Course Bioprocess Design was co-organised with Wageningen University & Research. This year the course was held in Delft, at the Botanical Garden in Delft. In 2021 the course will be held in Delft again.

The shift to online education brought us useful insights in online challenges and opportunities for high standards in remote teaching. These will be evaluated and used for improvements in the future.

3.1 Advanced Courses

An overview of the advanced courses of 2020 is shown in Table 1.

Table 1: Courses in 2020

Advanced Course	Times organised (since)	Length (weeks)	Participants (Industry / PhD / PDEng)
Microbial Physiology and Fermentation Technology 21 January – 1 February	32 (1988)	2	36 (18/18/0)
Bioprocess Design 14-18 September (planned: 16-20 March)	7 (2014)	1	22 (6/1/15)
Biocatalyses and Protein Engineering 30 November – 4 December (planned 20 – 24 April)	18 (1999)	2	17 (7/6/4)

In the graphs on the next page, the number of participants of the last seven years is shown. Three groups are visualised: PDEng (Professional Doctorate in Engineering), PhDs and participants from industries. We aim for a balanced involvement of industrial and PhD participants + PDEngs.

As said, this year was a very different year due to the COVID-19 pandemic. We are very fortunate to have been able to organise three courses this year, of which one fully online.

Interestingly, the participants and teachers indicated they enjoyed the online course, even though networking and small talks were reduced.

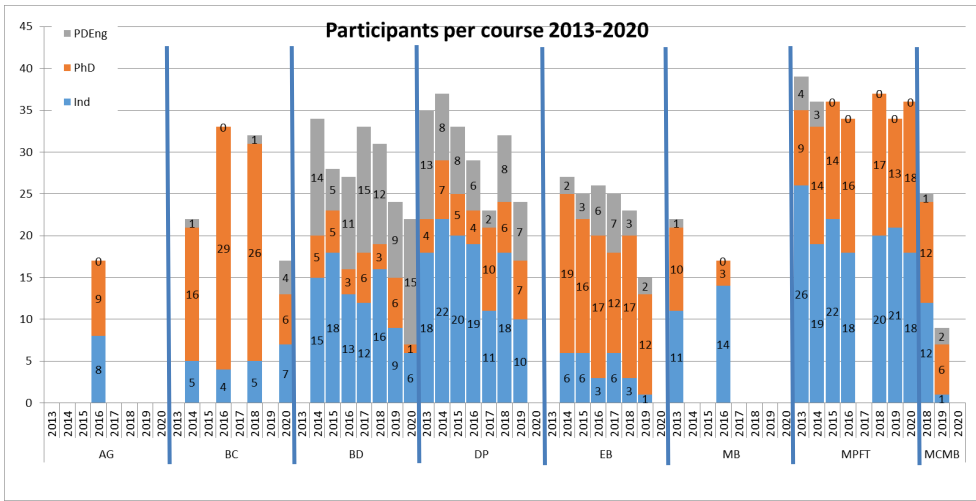


Figure 1: participants sorted per course over the last 5 years.

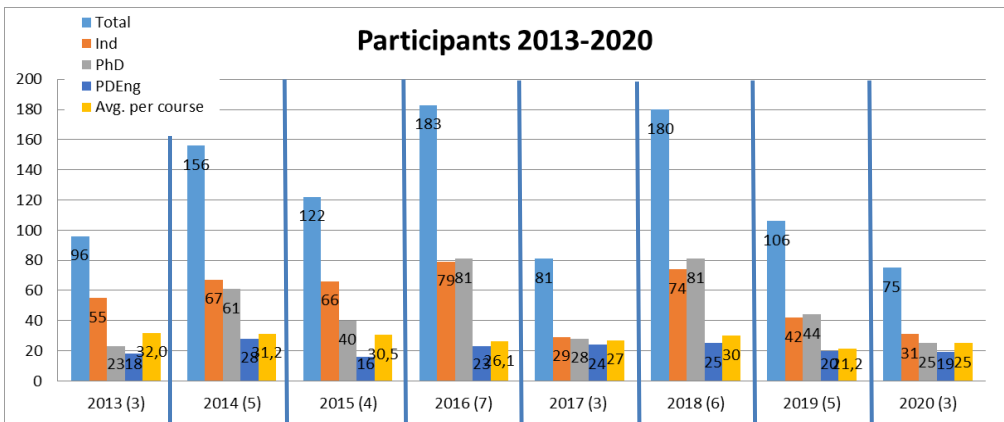


Figure 2: Participants sorted per year.

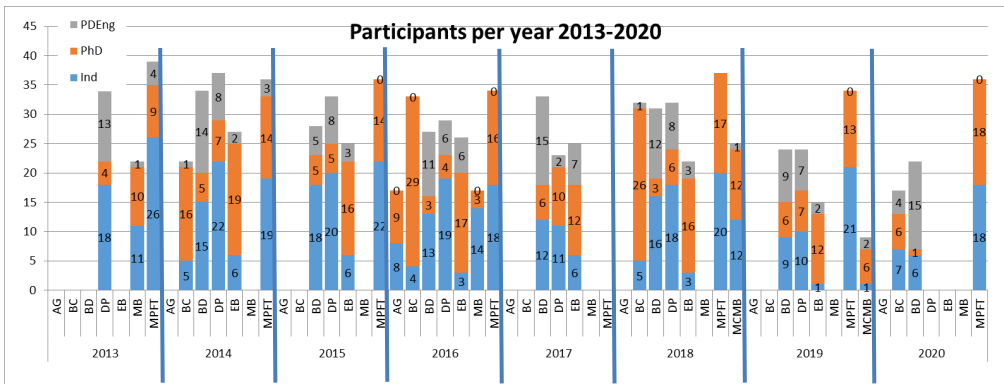


Figure 3: Participants totals per year in three groups. On the x-axis: year (number of courses)

3.2 Quality of the Advanced Courses

To ensure the quality of the Advanced Courses, all courses are evaluated by the participants and discussed yearly with the course boards. The evaluation gives insight in the relevance and didactic qualities of all presentations and lecturers. Furthermore the organisational part of the course is evaluated.

The average numbers are given in table 2. The scorings are presented in a range from 1-5 (very bad – excellent).

Table 2: results of evaluation Advanced Courses 2020

Advanced Course	2020 Content / org.	2019 Content / org.	2018 Content / org.	Historical avg. (7yrs)
Microbial Physiology and Fermentation Technology	4,1 / 4,8	4,5 / 4,7	4,4 / 4,7	4,4 / 4,8
Bioprocess Design	4,3 / 4,7	3,9 / 4,4	4,2 / 4,6	4,3 / 4,6
Biocatalysis and Protein Engineering	4,7 / 4,7		4,4 / 4,4	4,4 / 4,6

Generally we still see a high appreciation of the courses (average 4.4) and the organisation (average 4.7). The appreciation of the courses seems to be more or less constant. We are very proud of these results.

3.3 Promotion of the Advanced Courses

Our courses have a very good international reputation, but continuous promotion remains an important topic. Since the last three years, we asked applicants how they found our courses. Not all answer this question, but below the result of the last two years (indicated by themselves at registration).

Table 3: how course participants found the courses (in 2020, 2019 and 2018)

2020		Total	BC	BD	MPFT
By a colleague	55%	40	7	7	26
Via biotechnologycourses.nl	11%	8	1	4	3
By supervisor	4%	3		3	
By the brochure	7%	5	2	3	
Other	12%	9	1	4	4
Via search engine	11%	8	4	1	3
via BioTech Campus Delft	0%	0	0	0	0
Total	100%	73	15	22	36

2019		Total	BD	DP	EB	MPFT	MCMB
By a colleague	60%	59	12	9	9	24	5
Via biotechnologycourses.nl	8%	8	5	2		1	
By supervisor	2%	2			2		
By the brochure	3%	3			2		1
Other	13%	13	3	5	1	3	1
Via search engine	11%	11	2	2	2	5	
via BioTech Campus Delft	3%	3					3
Total	100%	99	22	18	16	33	10

2018		Total	BC	BD	DP	EB	MCMB
By a colleague	59%	48	8	5	12	11	12
Via biotechnologycourses.nl	16%	13	3	3	4	1	2
Supervisor	12%	10	2			1	7
By the brochure	6%	5		2	2		1
Other	5%	4					4
Via search engine	2%	2			2		
Total	100%	82	13	10	20	13	26

In 2019 we have made the question compulsory, so more applicants have answered. When comparing the three years, we see very comparable results in 2020 as in 2019. One applicant indicated to have heard of the Advanced Courses via the MOOC Industrial Biotechnology in 2020.

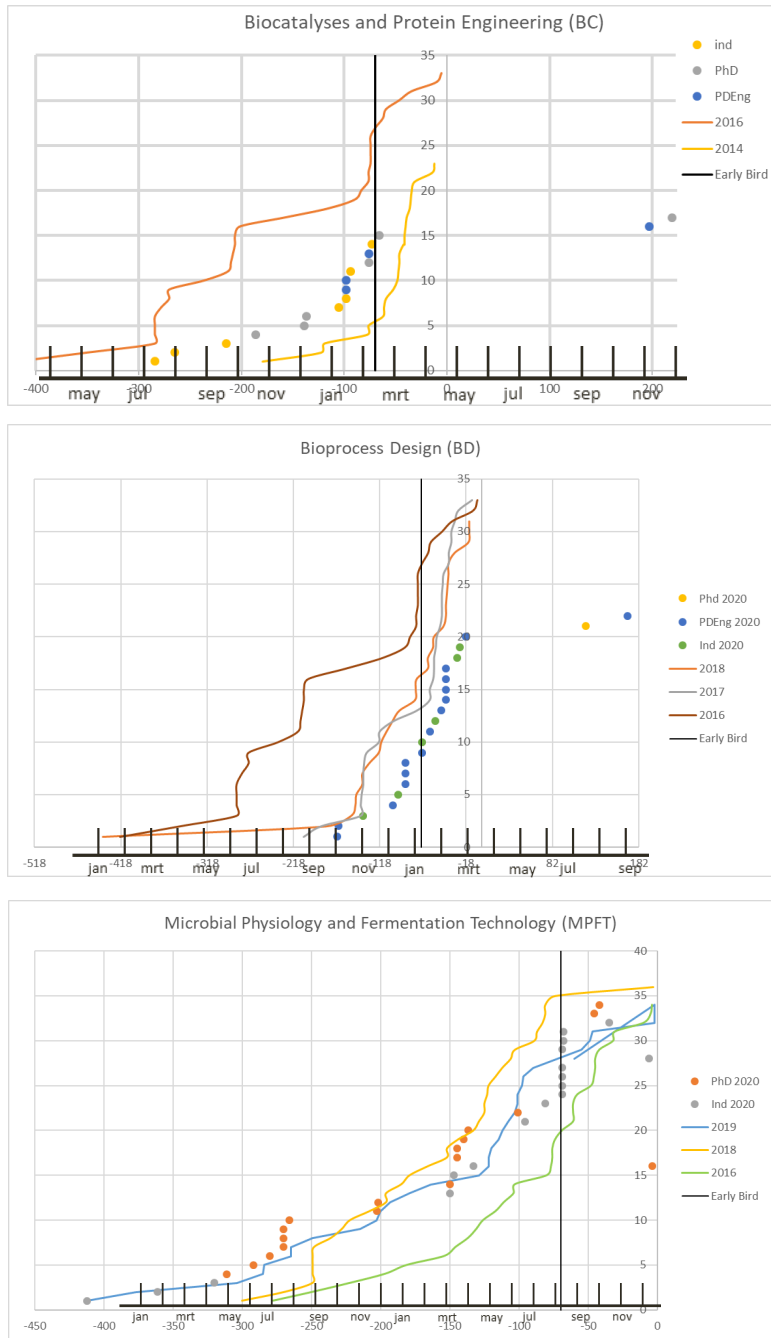


Figure 4: Registration of participants in time (x-axis represent days before run of the course. Months are also indicated). 3 categories of participants are visualised (dots) and the data of previous two years (line). 0 day's is where the course would have been taking place if we did not postpone them.

It still looks like participants continue to register between 50-150 days in advance of the course. We take into account that there is some time participants take between starting to find funding and persuading their manager and the moment participants actually register for our courses. So starting promotion about 200-250 days (7-8 months) in advance of the course seems reasonable.

The number of visits to the website fluctuates around 30 views per day. There were also videos made for promotion on our website.

Despite of our efforts, we see a decline in all parameters in Google Analytics. The largest decline is at the average duration and page views. This could indicate people search us with more pre-knowledge and leave sooner, or find less of their interest on our website and leave quicker.

We will continue looking at it, to see whether this is a trend or an incident.

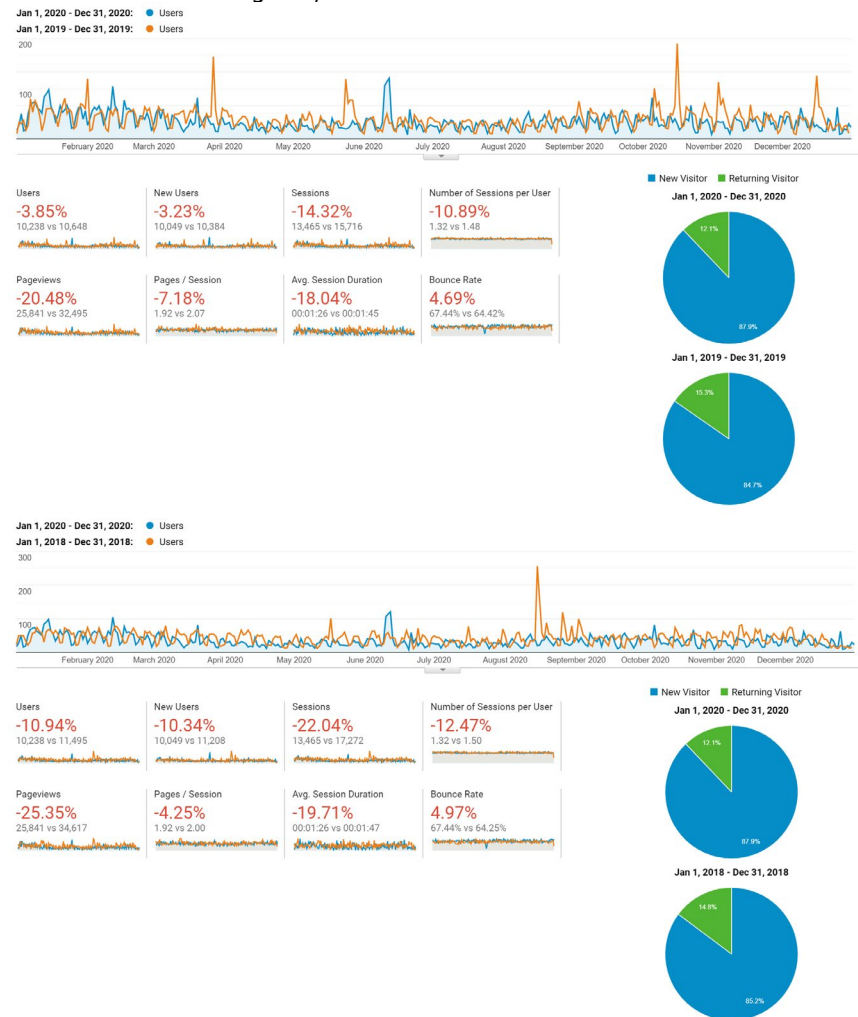


Figure 5: a comparison between the number of visitors on our website between 2019-2020 and 2018-2020.

The spike in June could be due to the ending of the MOOC Industrial Biotechnology and the email send in which we promote BioTech Delft. For the rest, no large spikes are seen; meaning that the course announcement and the second run of the MOOC Industrial biotechnology (7th of October - 13th of December) had little influence on the website traffic.

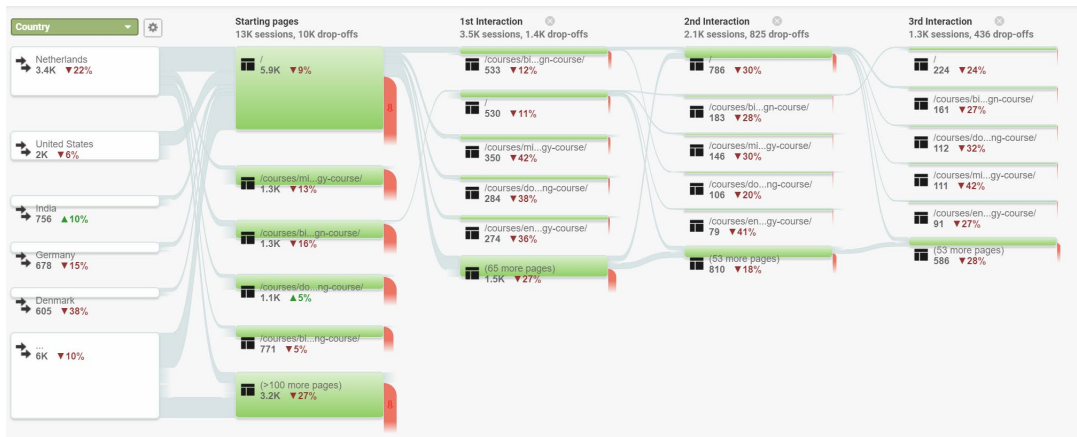


Figure 6: Flow diagram how visitors browsed through the website in 2019

For Downstream Processing and Microbial Physiology and Fermentation Technology no brochures were made. We did post messages on LinkedIn, below the amount of views (also on some other advertisement we made on LinkedIn):

Date	Announcements on LinkedIn	Views
16-12-20	Essentials MPFT	824 views
8-12-20	BC	467 views
20-9-20	BD prize winners	1902 views
20-5-20	MOOC IB reminder	229 views
20-3-20	MOOC IB	506 views
16-2-20	DP	361 views

We did not structurally post on LinkedIn yet. For 2021 we plan to make this more a habit.

On our website we saw an increase from India and a big decrease from Denmark. Still there were no registrations from India so far (also non in 2019). Probably due to the COVID-19 pandemic, participants don't bother looking for foreign courses.

Generally speaking, we are comparably visible over the years, looking at averages per day per year:

2020: 28,0
2019: 29,2
2018: 31,5
2017: 28,9
2016: 33,7
2015: 36,3

This year one course calendar was sent out (see picture below).

	opened	clicked on links
20 th of March 2020	29,6% (759x)	8,5% (217x)
17 th of October 2019	23,7% (628x)	6,4% (170x)
28 th of March 2019	25,8% (672x)	7,0% (183x)
16 th of August 2018	24.3% (586x)	6,6% (158x)

View this email in your browser

BioTech Delft: Advanced Courses in Industrial Biotechnology



Dear << Test First Name >> << Test Last Name >> ,

As many of us are now working from home, we thought we could give you the opportunity to repeat or learn about Industrial Biotechnology. We are pleased to offer two (free) options for that:

1. Take our online course: [\[redacted\]logy on Edx.org](#). We have changed the starting date from October to 24 March.
 2. Review your course material of courses you have attended in the past. If you lost it or cannot access it, we can transfer it to you.
- Please read how to do this below.

We have also postponed some of our courses. Please check our website if you would like to follow a course in the future.

Hope we will all get through this safe and healthy!

Kind regards,

BioTech Delft

[Why did I receive this email?](#)
[What is BioTech Delft?](#)

[Does receiving this newsletter help me?](#)
[Do thank you](#)

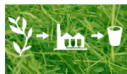
Course Calendar

- 29 Jun-6 Jul 2020 | [Downstream Processing](#)
- 26-30 Oct 2020 | NEW! [\[redacted\]tics Approaches](#)
- 14-18 Sep 2020 | [Bioprocess Design](#)
- 16-20 Nov 2020 | [\[redacted\]tuation for Micro-organisms in Bioprocesses](#)
- 30 Nov-4 Dec 2020 | [\[redacted\]tein Engineering](#)
- 18-29 Jan 2021 | [Microbial Physiology and Fermentation Tech](#)
- 25 May-4 Jun 2021 | [Environmental Biotechnology](#)

*This is the new course date

News

Free Online Course Industrial Biotechnology



Follow our free online course in Industrial Biotechnology. First register at [edx.org](#), then apply for the Industrial Biotechnology course 2020.

Learn all about the microbes, designing a bio-process, pretreatment, downstream and more! During this course you can win some nice prizes! You can find more info on the [\[redacted\]](#)

If you have any questions, email us at: biotechdelft@tudelft.nl

Digital coursebooks

As of 2016 we have transferred all the coursebooks to digital coursebooks. If you have followed a course previously and you would like to get a digital coursebook (OneNote), we can transfer that to you. Email us at biotechdelft@tudelft.nl. Please mention which course you followed and when.



Bioprocess Design and Biocatalyses postponed



The course date for Bioprocess Design will be 14th - 18th of September.
The new course date for Biocatalyses and Protein Engineering will be 30 November - 4 December.

[\[redacted\] this link.](#)

News feed

Do you want to be-to-date regarding the progress we make in the advances courses? For example the new hall of fame for AC Downstream Processing and Bioprocess Design. Or updates on what is happening? Check the new messages via [\[redacted\]](#) or us on [\[redacted\]](#)

Winners of the Genomatica Biopro



There are several ways in which you could have made it into our address database. Perhaps you took a course, requested information, a colleague might have known you are interested, or you are friends with one of the course leaders. If you are not interested in biotechnology courses, you can unsubscribe from our newsletter at any time. If you want to be deleted from our database completely, and also stop receiving paper brochures, please let us know by email.

Figure 7: newsletter on the left is of 20th of March (217 clicks in total). The percentages are of the total clicks

3.4 Online course Industrial Biotechnology

Since 2020 the MOOC Industrial Biotechnology is coordinated and maintained by the foundation. This year the MOOC has run two times:

- 7th of October - 13th of December
- 24th of March - 2nd of June

Table 4: total enrolments, verified and passed participants of the MOOC IB01x for 2020

Start Month	March	October
Enrollments	3316	2632
Verified	374	357
Passed	212	84

Because of the corona pandemic, the course has run two times this year. Usually it runs only in October. Verified participants are participants who pay approx. 50 dollars for the course and are able to gain a certificate for finishing the course (when the course exercises are made with a 55% correctness score).

The joint MOOC Biobased Products for a Sustainable Bioeconomy, developed together with universities in Ghent, Aachen, Wageningen and CLIB2021 in Germany was run three times with a total of 7620 participants.

The short MOOC EU Calc Pathway finder to a low carbon EU-society was developed and tested and will be offered in 2021. This MOOC module is a result of an EU project in which Patricia Osseweijer participated.

3.5 Synergy with the department of Biotechnology

The reputation of the Advanced Courses remains strong and has a positive effect on international visibility of the Biotechnology department. They also offer staff members the opportunity to get into and maintain in contact with our industrial partners via invited lecturers as well as via participants. Furthermore all Biotechnology employees are invited to follow the guest lectures, which is often indeed done (this feature was this year, due to the COVID-19 pandemic, not available).

The courses form an important part of the PDEng trainees education as well as PhDs from the department and campus. The opportunity to let PhD students and PDEng trainees work side by side with industrial participants is appreciated by all.

All in all we see many benefits by organising the Advanced Courses. This is something of value which the foundation BTD will strive to maintain.

4. Organisation

4.1 Employees of Foundation BioTech Delft

Program Director

V.L.J. Renken, MSc MSc(Ed)

Office Manager

Jenifer Baptiste, BA (from April)

Financial Administration

I.G.M. van Kersbergen (Kersenbeentjes BV)

4.2 Board of BioTech Delft

Chair: Dr. Ir. J.M.A. Geertman, Supply Chain Support Manager, HEINEKEN United Kingdom

Vice-chair: Prof. Dr. J.T.Pronk, Head of the department of Biotechnology and professor in Industrial Microbial Biotechnology, TU Delft (from June), and; Prof. Dr. Ulf Hanefeld, interim Head of department (until June)

Treasurer: Prof. Dr. P. Osseweijer, professor in Biotechnology and Society, TU Delft

Board member: Dr. A. Wahl, Assistant Professor Cell Systems Engineering, TU Delft

Board member: Dr. D. Claessen, Associate Professor Institute of Biology Leiden, Leiden University

Board member: Dr. C.C. Gerhardt, directeur Planet B.io, DSM (from November)

4.3 Contact information

Stichting Biotechnology Academy Delft

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W: www.biotechdelft.nl

5. Acknowledgment

Our courses could not be organised without the effort of many colleagues in- and outside the Department of Biotechnology, Delft University of Technology. We would like to thank all staff and lecturers of our courses for their contribution.