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# Industrial Reaction Engineering Course

In this course, reaction engineers from Dow will provide an overview of conventional and non-conventional reactors used in industry to manufacture chemical intermediates and products, with a focus on the design and scale-up of these reactors. For each reactor category, we will review typical applications and highlight relevant features of those reactors, including the reactor geometry, contacting pattern, heat management strategy, transport limitations, and rate limiting steps. With those features in mind, we will discuss the scale-up of each reactor type, focusing on conceptual design rather than mechanical details. In the final lectures, we plan to address special topics, including our perspectives on some reactor categories not included in this course and an overview of current industry practices and trends with respect to major processes and chemistries.

## COMMITMENT

- 20 virtual sessions (45 min lecture, 15 min Q&A). The lectures are held on the second Thursday of every month. Lecture times will be posted on the course website sent to registered participants.
- Current course began Oct. 14, 2020. Video recordings and slides for the first four lectures are available to those who register for the course. The next lecture, '5. Fluidized beds' will take place on Dec. 10, 2020.

## CERTIFICATION

 Participants who successfully complete this course will receive a LinkedIn certificate of completion.

## LECTURE TOPICS

I. FUNDAMENTALS	
1	<i>Kinetics, transport, contacting patterns, thermodynamics</i>
II. CONVENTIONAL REACTORS	
2	<i>Gas-liquid-solid or liquid-solid</i>
3	<i>Fixed beds - Gas-solid</i>
4	<i>Stirred tanks</i>
5	<i>Fluidized beds</i>
6	<i>Bubble columns</i>
7	<i>Loop reactors</i>
8	<i>Tubular reactors</i>
9	<i>Reactive extruders</i>
10	<i>Moving beds</i>
11	<i>Electrochemical reactors</i>
III. NON-CONVENTIONAL REACTORS	
12	<i>Rotating packed beds and other centrifugal reactors</i>
13	<i>Microreactors</i>
14	<i>Oscillatory flow baffled reactors</i>
15	<i>Reactive distillation</i>
16	<i>Autothermal monolithic catalyst reactors</i>
17	<i>Heat exchanger reactors</i>
IV. ADDITIONAL TOPICS	
18	<i>Rarely used reactors</i>
19	<i>Industry trends</i>
20	<i>Useful tools</i>

## INSTRUCTORS

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*Senior Engineer*  
*Senior Engineer*  
*Senior R&D Fellow*  
*Senior Engineer*  
*Associate Research Scientist*  
*Associate Research Scientist*  
*Research Specialist*  
*Associate Director*

## REGISTRATION

To sign up for access to live lectures and other course material please click on the register now link:

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