



**RAJALAKSHMI ENGINEERING COLLEGE**  
(An Autonomous Institution)  
Rajalakshmi Nagar, Thandalam, Chennai- 602 105.



**CENTRE OF EXCELLENCE IN  
MEMS AND MICROFLUIDICS**



*In Association with*  
**INSTITUTE OF SMART STRUCTURES AND SYSTEMS (ISSS)**  
**CERTIFICATE COURSE ON**  
**Microfluidics**

**Saturdays (05.03.2022, 12.03.2022, 19.03.2022 & 26.03.2022)**

Centre of Excellence in MEMS & Microfluidics (CEMM) at Rajalakshmi Engineering College has state-of-the-art research facilities with Clean Room infrastructure. CEMM focuses on research projects funded by various funding agencies such as DRDO, DST, AERB, UGC, AICTE etc., to develop miniaturized sensors for industrial / societal applications. The participants can gain knowledge on the cutting edge technologies, by exploring the various research activities being carried out at the center.

**SPECIAL FEATURES**

- *Hands-on training on simulation software*
- *Equipment demonstrations*
- *Mentoring by Faculty Expert/ SRF/ JRF*
- *Project Presentations*
- *Technical Discussions*
- *This program can be converted into 1 credit course under Autonomous Institutions /Universities.*
- *Live streaming of entire session for the candidates participating through online mode.*

Please refer to the attached syllabus.

**REGISTRATION DETAILS**

Last date for registration: **04.03.2022**

Online Registration Link :

<https://forms.gle/KL4xCMVm7hPAn9b27>

Course Fee : **Online Payment**

UG/PG students- **Rs. 2000/-**

Researchers & Academicians-**Rs.3000/-**

Industrialists- **Rs. 5000/-**

Name of the Account :**REC-R&D-CMMF**

Account No. : **145201000014680**

Name of the bank : **Indian Overseas Bank**

Branch : **Irungattukottai**

IFSC Code : **IOBA0001452**

**CERTIFICATE CRITERIA**

- *A minimum of 75% of total attendance*
- *A minimum of 60% score in the assessment*
- *Assignment submission*

**ELIGIBILITY**

Interested UG/ PG/ research scholars from any engineering discipline, academicians and industrialists.

**VENUE**

For offline candidates:  
**CEMM, J block, REC.**

- *Covid19 protocols will be strictly adhered.*
- *Accommodation and travel allowances should be borne by the candidate.*

For online candidates:  
**Google meet**

**CONTACT DETAILS**

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# CERTIFICATION COURSE SYLLABUS

Subject Code	Subject Name	Category	L	T	P	C
	<b>MICROFLUIDICS</b>		0	0	2	1

## Objectives:

- To introduce and strengthen the concept of microfluidic technology.
- To gain clear understanding of fabrication techniques in microfluidics.
- To familiarize the ways to analyse various applications of microfluidics.
- To impart knowledge on the CAD design of micro-mixers.
- To empower the students to design and fabricate novel microfluidic devices.

## Course Content:

<b>1</b>	<b>Microfluidic Technology - Introduction, definitions and applications</b>
<b>2</b>	<b>Materials for microfluidic device fabrication</b>
<b>3</b>	<b>Fabrication Techniques for Microfluidics, Soft Lithography Technique in detail</b>
<b>4</b>	<b>Laboratory session 1- wafer cleaning process</b>
<b>5</b>	<b>Laboratory session 2- Prime mould fabrication</b>
<b>6</b>	<b>Laboratory session 3- Replicas by casting</b>
<b>7</b>	<b>Laboratory session 4- Sealing of microchannel with a cover glass</b>
<b>8</b>	<b>Laboratory session 5- Leak testing</b>
<b>9</b>	<b>Laboratory session 6- Characterization of micro channels</b>
<b>10</b>	<b>CAD design of micro channels, Simulation of micro-mixers</b>
<b>11</b>	<b>Applications of microfluidics – recent reports</b>
<b>Total contact hours</b>	
	<b>: 30</b>

## Course Outcomes:

On completion of the course, the candidate will be able to

- understand the fundamentals of microfluidic technology.
- demonstrate the various fabrication techniques used in microfluidics.
- analyse the working and design of various microfluidic devices.
- design complex micro-mixers in various CAD software.
- fabricate any microfluidic devices in real time.

## References:

<b>1</b>	<b>Albert Folch, “Introduction to BioMEMS”, CRC press, Taylor and Francis group, 2013.</b>
<b>2</b>	<b>Yujun Song, Daojian Cheng, Liang Zhao, “Microfluidics: Fundamentals, Devices, and Applications”, Wiley VCH publications, 2018.</b>
<b>3</b>	<b>Patrick Tabeling, Suelin Chen, ” Introduction to Microfluidics”, Oxford University press, first edition 2005, reprint 2011.</b>
<b>4</b>	<b>Suman Chakraborty, Microfluidics and Microfabrication, Springer, 2014, ISBN-10:9781489984609</b>