

From

Dr. Sailaja U
The Head of the Department
Department of Physics
MES Keveeyam College, Valanchery

To

The principal
MES Keveeyam College, Valanchery

Sir,

Sub: Request for the Approval of Certificate Course

The Department of Physics is planning to conduct a Certificate Course on **"Introduction to Nano Fabrication Techniques"** of 30 hours duration for the first and third year UG students. So kindly grant permission for the same.

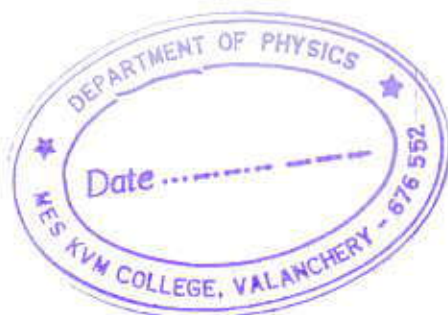
Thanking you

Yours faithfully,

Dr. Sailaja U

Place: Valanchery

Date: 09/12/2022



Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552

SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

From

Dr. Sailaja U
Head of the Department
Department of Physics
MES Keveeyam College, Valanchery

To

The Principal
MES Keveeyam College, Valanchery

Sir,

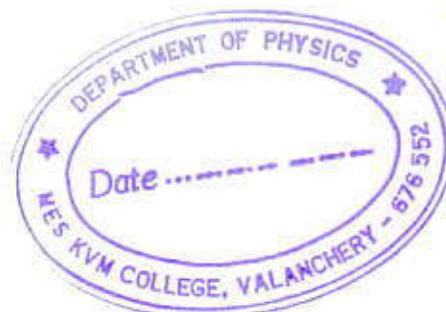
Sub: Request for the Approval of Board of Studies for the short Term Course

The following academicians may be included in the Board of Studies for the Short Term Course on "Certificate Course in Introduction to nano fabrication techniques" to be conducted by the Department of Physics with these members.

1. Dr. Bincy I P, HOD & Assistant Professor, MES College , Nedumkandam
2. Dr. Sailaja U, HOD & Assistant Professor, MES Keveeyam college, Valanchery
3. Abdul Majeed KM, Associate professor, MES Keveeyam college, Valanchery
4. Muhammed Shibu K, Assistant Professor, MES Keveeyam college, Valanchery
5. Dr.Nabeel Rashin M, Assistant Professor, MES Keveeyam college, Valanchery
6. Dr. Navas M P, Assistant Professor, MES Keveeyam college, Valanchery
7. Lubna A, Assistant Professor, MES Keveeyam college, Valanchery
8. Dr. Deepa AV, Assistant Professor, MES Keveeyam college, Valanchery

Place: Valanchery

Date: 10/12/2022



Thanking you

Yours faithfully


Dr. Sailaja U
Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552


SHAQID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

Minutes of Board of Studies Meeting

Date: 11/12/2022

Time: 2:00 PM – 4:00 PM

Location: Department of Physics

Attendees

1. Dr. Bincy I P, Assistant Professor, MES College, Nedumkandam (online)
2. Dr. Sailaja U, Assistant Professor, MES Keveeyam college, Valanchery
3. Abdul Majeed K M, Associate professor, MES Keveeyam college, Valanchery
4. Muhammed Shibu K, Assistant Professor, MES Keveeyam college, Valanchery
5. Dr. Nabeel Rashin M, Assistant Professor, MES Keveeyam college, Valanchery
6. Dr. Navas M P, Assistant Professor, MES Keveeyam college, Valanchery
7. Lubna A, Assistant Professor, MES Keveeyam college, Valanchery
8. Dr. Deepa AV, Assistant Professor, MES Keveeyam college, Valanchery

Agenda

1. Opening remarks by HOD
2. Presentation of Proposal for Certificate Course on "Introduction to Nano Fabrication Techniques" by . Discussion on Course Content and Structure
3. Discussion on Approval Process and Timeline
4. Discussion on Resource Allocation and Faculty Involvement
5. Closing remarks by Dr. Deepa AV

Decisions

1. Decide to conduct a certificate course on "Nano Fabrication Techniques "
2. Dr. Deepa AV is assigned as coordinator
3. The members discussed the proposed content of syllabus
4. Board agreed to conduct the course from 03 January 2023 to 28th February 2023
5. HOD proposed the involvement of all faculty members from the department on conduction of the course

Action Item

1. Coordinator : Dr. Deepa AV Finalize Course Content - Dr. Deepa AV and Dr. Sailaja U
HOD, Dead line: 13/12/2022
 2. Prepare approval documents – Dr. Deepa AV
 3. Launch course – Entire team
- Meeting Adjourned

Minutes prepared by: Dr. Deepa AV

These minutes will be circulated to all committee members for their reference & review

SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
MES KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552



Dr. Sailaja U
Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552



Proceedings of the Principal, MES Keveeyam College, Valanchery

Sub: Certificate Course – Reg.

Ref: (1) Request from the head of the Department of Physics, Dated 09.12.2022

(2) Minutes of the Board of Studies Meeting for approval of the syllabus Dated
11.12.2023

ORDER

As per the reference cited (1), a request was received from the Head of the Department of Physics to start a certificate course on CC/PHY/22-23/03 Introduction to Nano fabrication techniques for first and third year UG students. In the same letter, the head of the Department has recommended a panel of academicians to be included in the Board of Studies.

The Board of Studies for the above course is constituted of the following members

1. Dr. Bincy I P (Assistant Professor, Department of Physics, MES Nedumkandam College)
2. Dr. Sailaja U (Head of the department and Assistant Professor, Department of Physics, MES Keveeyam college, Valanchery)
3. Abdul Majeed K M, (Associate professor, Department of Physics MES Keveeyam college, Valanchery)
4. Muhammed Shibu K (Assistant Professor, Department of Physics, MES Keveeyam college, Valanchery)
5. Dr.Nabeel Rashin M (Assistant Professor, Department of Physics, MES Keveeyam college, Valanchery)
6. Dr. Navas M P,(Assistant Professor, Department of Physics, MES Keveeyam college, Valanchery)
7. Lubna A, (Assistant Professor, Department of Physics, MES Keveeyam college, Valanchery)
8. Dr. Deepa AV (Assistant Professor, Department of Physics MES Keveeyam college, Valanchery)

Sanction is hereby accorded to the Department of Physics for conducting the above-referred certificate course.

Order is issued accordingly.

Principal

SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

Copy to:

1. HoD, Department of Physics
2. File





MES KEVEEYAM COLLEGE VALANCHERY

MALAPPURAM | KERALA | NAAC Reaccredited with A+ Grade (3.44)

www.meskeveeyamcollege.ac.in

REGISTER >>

NOW

DEPARTMENT OF PHYSICS
ORGANISING

INTRODUCTION TO “NANOFABRICATION TECHNIQUES”



COURSES STARTS FROM 03-01-2023



Dr Deepa A V



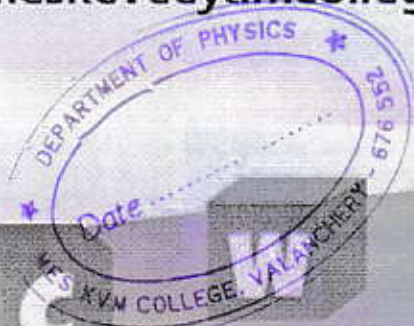
9940041580



www.meskeveeyamcollege.ac.in



physics@meskeveeyamcollege.ac.in



Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, PIN 676 552

SHAHID P I
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
MES KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

MES KEVEEYAM COLLEGE VALANCHERY

DEPARTMENT OF PHYSICS

CERTIFICATE COURSE

KVM/CC/PHY/22-23/03- "INTRODUCTION TO NANO FABRICATION TECHNIQUES "

30 hrs

Objectives:

- Enabling the creation of advanced electronic, photonic, and quantum devices with improved performance and new functionalities.
- Facilitating the development of nano scale medical devices and systems for diagnostics, drug delivery, and minimally invasive therapies.
- Utilizing unique nano scale properties to create materials with superior strength, conductivity, reactivity, and other desirable characteristics.
- Encouraging collaboration across different scientific and engineering disciplines, leading to comprehensive and integrated solutions to complex challenges.
- Providing valuable knowledge and skills to students and professionals, preparing them for careers in cutting-edge fields.
- Study of nanofabrication techniques holds the potential to revolutionize various industries and improve the quality of life through technological, medical, and environmental advancements.

Outcomes:

- Creation of smaller, faster, and more efficient electronic and photonic devices, such as transistors, sensors, and lasers.
- Development of nano scale medical devices for diagnostics, imaging, drug delivery, and targeted therapies, improving patient outcomes and reducing side effects.
- Production of materials with enhanced mechanical, electrical, optical, and chemical properties, leading to applications in various industries.
- Improvement in the performance and efficiency of energy storage and conversion devices, such as batteries, supercapacitors, and solar cells.
- Adoption of environmentally friendly nanofabrication techniques that reduce waste and energy consumption.
- Generation of new industries and job opportunities, driving economic growth through the commercialization of nanotechnology-based products.
- Training a new generation of scientists, engineers, and technologists with expertise in nanofabrication, fostering innovation and leadership in the field.
- Development of novel tools and methodologies for nanoscale research, enabling new discoveries and deeper understanding of fundamental science.

Course Contents

- Theory: 30Hrs.

Scheme of evaluation

- Written Examination (Conventional) : 40 marks
- Assignment : 10 marks
- Total : 50 marks

A Grade: 80% and above, B Grade: 60 – 79%, C Grade: 40 – 59%, below 40% D Grade



Dr. Sailata U
Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552

Shajid P P
SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

MES KEVEEYAM COLLEGE VALANCHERY
DEPARTMENT OF PHYSICS
KVM/CC/PHY/22-23/03- Introduction to Nano fabrication techniques

SYLLABUS
(2022- 2023)

Unit 1: Introduction to Nanofabrication (10 hours)

Historical development and significance -Applications in various fields (electronics, medicine, energy)- Nanoscale phenomena and quantum effect- Surface-to-volume ratio and its implication- Basic principles of quantum mechanics relevant to nanofabrication

Unit 2: Lithography Techniques(10 hours)

Principles of photolithography- Process steps: photoresist application, exposure, development- Limitations and resolution issues-Fundamentals of electron beam lithography (EBL)-Advantages and applications of EB- Practical considerations and limitations- Nanoimprint lithography: principles and process-Soft lithography techniques: PDMS stamping, microcontact printing- Comparison with traditional lithography methods

Unit 3: Etching Techniques (5 hours)

Dry etching: plasma and reactive ion etching (RIE)- Wet etching: chemical etching processes-Etching selectivity and anisotropy

Unit 4: Deposition Techniques(5hours)

Evaporation and sputtering techniques-Thin film deposition principles-Applications and limitations of PVD



Sw
Dr. Sailaja U
Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552

SHAJID P P
SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676552

MES KEVEEYAM COLLEGE VALANCHERY
DEPARTMENT OF PHYSICS
**TIME TABLE FOR CERTIFICATE COURSE ON INTRODUCTION TO NANO
FABRICATION TECHNIQUES**
(03/01/23 TO 28/02/23)

Sl. no.	Date	Day	Name of the faculty engaging the class	time
1.	03/01/2023	Tuesday	Dr. Deepa AV	3.30-4.30
2.	04/01/2023	Wednesday	Dr. Deepa AV	3.30-4.30
3.	05/01/2023	Thursday	Dr. Navas M P	8.30-9.30
4.	05/01/2023	Thursday	Dr. Deepa AV	3.30-4.30
5.	06/01/2023	Friday	Dr. Sailaja U	8.30-9.30
6.	06/01/2023	Friday	Mohammed Shibu K	3.30-4.30
7.	11/01/2023	Wednesday	Abdul Majeed KM	8.30-9.30
8.	11/01/2023	Wednesday	Lubna A	3.30-4.30
9.	12/01/2023	Thursday	Dr. Deepa AV	8.30-9.30
10.	12/01/2023	Thursday	Dr. Deepa AV	3.30-4.30
11.	13/01/2023	Friday	Dr. Navas M P	3.30-4.30
12.	17/01/2023	Tuesday	Dr. Navas M P	3.30-4.30
13.	19/01/2023	Thursday	Dr.Nabeel Rashin M	8.30-9.30
14.	19/01/2023	Thursday	Dr. Sailaja U	3.30-4.30
15.	20/01/2023	Friday	Mohammed Shibu K	8.30-9.30
16.	20/01/2023	Friday	Dr.Nabeel Rashin M	3.30-4.30
17.	27/01/2023	Friday	Lubna A	8.30-9.30
18.	27/01/2023	Friday	Dr. Deepa AV	3.30-4.30
19.	13/02/2023	Monday	Dr. Deepa AV	8.30-9.30
20.	13/02/2023	Monday	Dr.Nabeel Rashin M	3.30-4.30
21.	14/02/2023	Tuesday	Dr. Deepa AV	8.30-9.30
22.	14/02/2023	Tuesday	Dr. Navas M P	3.30-4.30
23.	15/02/2023	Wednesday	Dr. Sailaja U	8.30-9.30
24.	15/02/2023	Wednesday	Mohammed Shibu K	3.30-4.30

25.	16/02/2023	Thursday	Abdul Majeed KM	8.30-9.30
26.	16/02/2023	Thursday	Lubna A	3.30-4.30
27.	17/02/2023	Friday	Dr. Navas M P	8.30-9.30
28.	17/02/2023	Friday	Dr. Navas M P	3.30-4.30
29.	24/02/2023	Friday	Dr. Deepa AV	8.30-9.30
30.	24/02/2023	Friday	Dr. Deepa AV	3.30-4.30

Dr. Deepa AV - 10 hr

Dr. Navas M P - 6

Dr. Nabeel Rashin M - 3 hr

Dr. Sailaja U - 3 hr

Abdul Majeed KM - 2 hrs

Mohammed Shibu K - 3 hrs

Lubna A - 3 hr



[Signature]
Head of the Department
 Department of Physics
MES KEVEEYAM COLLEGE
 Valanchery, 676552

[Signature]
SHAJID P P
 ASSISTANT PROFESSOR
 IN CHARGE OF PRINCIPAL
 M.E.S KEVEEYAM COLLEGE
 VALANCHERY, PIN 676 552

MES KEVEEYAM COLLEGE VALANCHERY

Department of Physics

KVM/CC/PHY/22-23/03- Introduction to Nano Fabrication Techniques

Sl No	Name of the students	Class	Date											
			03/06/21	04/06/21	05/06/21	06/06/21	07/06/21	08/06/21	09/06/21	10/06/21	11/06/21	12/06/21	13/06/21	14/06/21
1.	AMRIN A	III BSc Physics	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr
2.	ARSHITHA K	III BSc Physics	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh
3.	ASHMIYA ANCHUP	III BSc Physics	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi	Asmi
4.	FATHIMA MURSHIDA SP	III BSc Physics	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath
5.	FATHIMA NUSRIYYA	III BSc Physics	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath
6.	MUHAMMED RAFEEKH PK	III BSc Physics	Muham	Muham	Muham	Muham	Muham	Muham	Muham	Muham	Muham	Muham	Muham	Muham
7.	RANIYA K	III BSc Physics	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani
8.	SAYEDATH SAHANA VT	III BSc Physics	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed	Sayed

Signature

ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, TAMIL NADU

21.	SHAMNA SHIRIN KP	III BSc Physics	A
22.	VARSHA K	III BSc Physics	B
23.	ANSAD KP	III BSc Physics	A
24.	ANSHAD KT	III BSc Physics	C
25.	ARIJUN VK	III BSc Physics	A
26.	ASHIMA DAS V	III BSc Physics	D
27.	FATHIMA HIBA PA	III BSc Physics	B
28.	GAYATHRI PK	III BSc Physics	C
29.	MIDULAJ	III BSc Physics	A
30.	MUHAMMED ADHILSHAN MA	III BSc Physics	MA
31.	NABEEL MP	III BSc Physics	D
32.	PRANAV VE	III BSc Physics	B

SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

33.	SANGEETHA TP	III BSc Physics	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100	Q101	Q102	Q103	Q104	Q105	Q106	Q107	Q108	Q109	Q110	Q111	Q112	Q113	Q114	Q115	Q116	Q117	Q118	Q119	Q120	Q121	Q122	Q123	Q124	Q125	Q126	Q127	Q128	Q129	Q130	Q131	Q132	Q133	Q134	Q135	Q136	Q137	Q138	Q139	Q140	Q141	Q142	Q143	Q144	Q145	Q146	Q147	Q148	Q149	Q150	Q151	Q152	Q153	Q154	Q155	Q156	Q157	Q158	Q159	Q160	Q161	Q162	Q163	Q164	Q165	Q166	Q167	Q168	Q169	Q170	Q171	Q172	Q173	Q174	Q175	Q176	Q177	Q178	Q179	Q180	Q181	Q182	Q183	Q184	Q185	Q186	Q187	Q188	Q189	Q190	Q191	Q192	Q193	Q194	Q195	Q196	Q197	Q198	Q199	Q200	Q201	Q202	Q203	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211	Q212	Q213	Q214	Q215	Q216	Q217	Q218	Q219	Q220	Q221	Q222	Q223	Q224	Q225	Q226	Q227	Q228	Q229	Q230	Q231	Q232	Q233	Q234	Q235	Q236	Q237	Q238	Q239	Q240	Q241	Q242	Q243	Q244	Q245	Q246	Q247	Q248	Q249	Q250	Q251	Q252	Q253	Q254	Q255	Q256	Q257	Q258	Q259	Q260	Q261	Q262	Q263	Q264	Q265	Q266	Q267	Q268	Q269	Q270	Q271	Q272	Q273	Q274	Q275	Q276	Q277	Q278	Q279	Q280	Q281	Q282	Q283	Q284	Q285	Q286	Q287	Q288	Q289	Q290	Q291	Q292	Q293	Q294	Q295	Q296	Q297	Q298	Q299	Q300	Q301	Q302	Q303	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314	Q315	Q316	Q317	Q318	Q319	Q320	Q321	Q322	Q323	Q324	Q325	Q326	Q327	Q328	Q329	Q330	Q331	Q332	Q333	Q334	Q335	Q336	Q337	Q338	Q339	Q340	Q341	Q342	Q343	Q344	Q345	Q346	Q347	Q348	Q349	Q350	Q351	Q352	Q353	Q354	Q355	Q356	Q357	Q358	Q359	Q360	Q361	Q362	Q363	Q364	Q365	Q366	Q367	Q368	Q369	Q370	Q371	Q372	Q373	Q374	Q375	Q376	Q377	Q378	Q379	Q380	Q381	Q382	Q383	Q384	Q385	Q386	Q387	Q388	Q389	Q390	Q391	Q392	Q393	Q394	Q395	Q396	Q397	Q398	Q399	Q400	Q401	Q402	Q403	Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411	Q412	Q413	Q414	Q415	Q416	Q417	Q418	Q419	Q420	Q421	Q422	Q423	Q424	Q425	Q426	Q427	Q428	Q429	Q430	Q431	Q432	Q433	Q434	Q435	Q436	Q437	Q438	Q439	Q440	Q441	Q442	Q443	Q444	Q445	Q446	Q447	Q448	Q449	Q450	Q451	Q452	Q453	Q454	Q455	Q456	Q457	Q458	Q459	Q460	Q461	Q462	Q463	Q464	Q465	Q466	Q467	Q468	Q469	Q470	Q471	Q472	Q473	Q474	Q475	Q476	Q477	Q478	Q479	Q480	Q481	Q482	Q483	Q484	Q485	Q486	Q487	Q488	Q489	Q490	Q491	Q492	Q493	Q494	Q495	Q496	Q497	Q498	Q499	Q500	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q509	Q510	Q511	Q512	Q513	Q514	Q515	Q516	Q517	Q518	Q519	Q520	Q521	Q522	Q523	Q524	Q525	Q526	Q527	Q528	Q529	Q530	Q531	Q532	Q533	Q534	Q535	Q536	Q537	Q538	Q539	Q540	Q541	Q542	Q543	Q544	Q545	Q546	Q547	Q548	Q549	Q550	Q551	Q552	Q553	Q554	Q555	Q556	Q557	Q558	Q559	Q560	Q561	Q562	Q563	Q564	Q565	Q566	Q567	Q568	Q569	Q570	Q571	Q572	Q573	Q574	Q575	Q576	Q577	Q578	Q579	Q580	Q581	Q582	Q583	Q584	Q585	Q586	Q587	Q588	Q589	Q590	Q591	Q592	Q593	Q594	Q595	Q596	Q597	Q598	Q599	Q600	Q601	Q602	Q603	Q604	Q605	Q606	Q607	Q608	Q609	Q610	Q611	Q612	Q613	Q614	Q615	Q616	Q617	Q618	Q619	Q620	Q621	Q622	Q623	Q624	Q625	Q626	Q627	Q628	Q629	Q630	Q631	Q632	Q633	Q634	Q635	Q636	Q637	Q638	Q639	Q640	Q641	Q642	Q643	Q644	Q645	Q646	Q647	Q648	Q649	Q650	Q651	Q652	Q653	Q654	Q655	Q656	Q657	Q658	Q659	Q660	Q661	Q662	Q663	Q664	Q665	Q666	Q667	Q668	Q669	Q670	Q671	Q672	Q673	Q674	Q675	Q676	Q677	Q678	Q679	Q680	Q681	Q682	Q683	Q684	Q685	Q686	Q687	Q688	Q689	Q690	Q691	Q692	Q693	Q694	Q695	Q696	Q697	Q698	Q699	Q700	Q701	Q702	Q703	Q704	Q705	Q706	Q707	Q708	Q709	Q710	Q711	Q712	Q713	Q714	Q715	Q716	Q717	Q718	Q719	Q720	Q721	Q722	Q723	Q724	Q725	Q726	Q727	Q728	Q729	Q730	Q731	Q732	Q733	Q734	Q735	Q736	Q737	Q738	Q739	Q740	Q741	Q742	Q743	Q744	Q745	Q746	Q747	Q748	Q749	Q750	Q751	Q752	Q753	Q754	Q755	Q756	Q757	Q758	Q759	Q760	Q761	Q762	Q763	Q764	Q765	Q766	Q767	Q768	Q769	Q770	Q771	Q772	Q773	Q774	Q775	Q776	Q777	Q778	Q779	Q780	Q781	Q782	Q783	Q784	Q785	Q786	Q787	Q788	Q789	Q790	Q791	Q792	Q793	Q794	Q795	Q796	Q797	Q798	Q799	Q800	Q801	Q802	Q803	Q804	Q805	Q806	Q807	Q808	Q809	Q810	Q811	Q812	Q813	Q814	Q815	Q816	Q817	Q818	Q819	Q820	Q821	Q822	Q823	Q824	Q825	Q826	Q827	Q828	Q829	Q830	Q831	Q832	Q833	Q834	Q835	Q836	Q837	Q838	Q839	Q840	Q841	Q842	Q843	Q844	Q845	Q846	Q847	Q848	Q849	Q850	Q851	Q852	Q853	Q854	Q855	Q856	Q857	Q858	Q859	Q860	Q861	Q862	Q863	Q864	Q865	Q866	Q867	Q868	Q869	Q870	Q871	Q872	Q873	Q874	Q875	Q876	Q877	Q878	Q879	Q880	Q881	Q882	Q883	Q884	Q885	Q886	Q887	Q888	Q889	Q890	Q891	Q892	Q893	Q894	Q895	Q896	Q897	Q898	Q899	Q900	Q901	Q902	Q903	Q904	Q905	Q906	Q907	Q908	Q909	Q910	Q911	Q912	Q913	Q914	Q915	Q916	Q917	Q918	Q919	Q920	Q921	Q922	Q923	Q924	Q925	Q926	Q927	Q928	Q929	Q930	Q931	Q932	Q933	Q934	Q935	Q936	Q937	Q938	Q939	Q940	Q941	Q942	Q943	Q944	Q945	Q946	Q947	Q948	Q949	Q950	Q951	Q952	Q953	Q954	Q955	Q956	Q957	Q958	Q959	Q960	Q961	Q962	Q963	Q964	Q965	Q966	Q967	Q968	Q969	Q970	Q971	Q972	Q973	Q974	Q975	Q976	Q977	Q978	Q979	Q980	Q981	Q982	Q983	Q984	Q985	Q986	Q987	Q988	Q989	Q990	Q991	Q992	Q993	Q994	Q995	Q996	Q997	Q998	Q999	Q1000
-----	--------------	-----------------	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

SUNAND P P
ASSISTANT PROFESSOR,
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

[illegible]

ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY PIN 676 577

MES KEVEEYAM COLLEGE VALANCHERY

Department of Physics

KVM/CC/PHY/22-23/03- Introduction to Nano Fabrication Techniques

Sl No	Name of the students	Class	Date														
1.	AMRIN A	III BSc Physics	20/01	27/01	27/01	13/02/23	13/02	14/02/23	15/02/23	15/02	16/02	17/02	18/02	24/02	24/02		
		Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr	Amr		
2.	ARSHITHA K	III BSc Physics	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh		
		Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh	Arsh		
3.	ASHMIYA ANCHU P	III BSc Physics	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi		
		Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi	Shmi		
4.	FATHIMA MURSHIDA SP	III BSc Physics	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath		
		Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath	Fath		
5.	FATHIMA NUSRIYYA	III BSc Physics	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr		
		Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr	Nusr		
6.	MUHAMMED RAFAEKH PK	III BSc Physics	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf		
		Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf	Raf		
7.	RANIYA K	III BSc Physics	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani		
		Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani	Rani		
8.	SAVEDATH SAHANA VT	III BSc Physics	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say		
		Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say	Say		

SHAJID PP
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

[illegible]

SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

[illegible]

SHAIK P P

ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552

45.	RINCY JESNA A P	I BSc Physics	Rank	A	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
46.	SHAHANA	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
47.	SANIYA	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
48.	MUHAMMAD ADNAN	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
49.	MOHAMMED NAJI K K	I BSc Physics	Rank	A	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
50.	MOHAMMED SHUHAIB K	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
51.	MUHAMMAD AFSAL N	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
52.	MUHAMMED SUHAIL P	I BSc Physics	Rank	A	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
53.	ARYA M K	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
54.	MIDHUNA K	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
55.	UMMU HABEEBA P	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
56.	MOHAMMED IRSHAD M P	I BSc Physics	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank

SHAJID P P

ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
MALANCHERY, PIN 676 552



Name:

Reg. No:

M E S KEVEEYAM COLLEGE VALANCHERY

CERTIFICATE COURSE EXAMINATION, MARCH, 2023

KVM/CC/PHY/22-23/03-INTRODUCTION TO NANO FABRICATION TECHNIQUES

Time: 1.30Hrs

Maximum:40 Marks

Section A

(Answer all questions, each carries 2 marks)

1. Give significance and applications of nanofabrication techniques in various fields.
2. What does it mean by dry etching?
3. Explain basic principles of quantum mechanics relevant to nanofabrication.
4. Briefly explain evaporation techniques.
5. Give the importance of sputtering techniques.

Section B

(Answer any two questions, carries 5 marks)

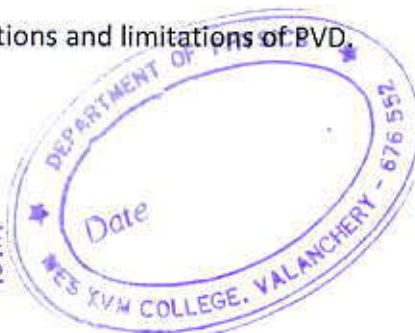
6. Explain plasma and reactive ion etching.
7. Explain principles and process of Nanoimprint lithography.
8. Compare micro contact printing with traditional lithography methods.

Section C

(Answer any two questions, each carries 10 marks)

9. Explain principle and different steps in photolithography.
10. Give the importance of etching process.
11. Give the applications and limitations of PVD.


SILAKSHI P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552




Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552

MES KEVEEYAM COLLEGE VALANCHERY
DEPARTMENT OF PHYSICS
CERTIFICATE COURSE ON INTRODUCTION TO NANO FABRICATION TECHNIQUES
(03/01/23 TO 28/02/23)
LIST OF CERTIFIED STUDENTS

SL. No	NAME OF THE STUDENTS	<u>Class</u>	Mark	Certification
1	AMRIN A	III BSc Physics	37	Certified
2	ARSHITHA K	III BSc Physics	29	Certified
3	ASHMIYA ANCHU P	III BSc Physics	42	Certified
4	FATHIMA MURSHIDA SP	III BSc Physics	46	Certified
5	FATHIMA NUSRIYYA	III BSc Physics	25	Certified
6	MUHAMMED RAFEEKH PK	III BSc Physics	40	Certified
7	RANIYA K	III BSc Physics	35	Certified
8	SAYEDATH SAHANA VT	III BSc Physics	32	Certified
9	SHIBLA NASREEN P	III BSc Physics	32	Certified
10	SUHANA C	III BSc Physics	38	Certified
11	UMMU AYISHA	III BSc Physics	35	Certified
12	AJAL KRISHNA A	III BSc Physics	49	Certified
13	ALTHAF KAREEM	III BSc Physics	42	Certified
14	ARDRA S	III BSc Physics	48	Certified
15	FATHIMA RENEESHA P	III BSc Physics	30	Certified
16	JASIM PK	III BSc Physics	32	Certified
17	MEHSAF ALI TM	III BSc Physics	33	Certified
18	MUHAMED SHAMEEM KP	III BSc Physics	38	Certified
19	SAADIYYA	III BSc Physics	32	Certified
20	SAHEEDUL FAYIS K	III BSc Physics	33	Certified
21	SHAMNA SHIRIN KP	III BSc Physics	35	Certified

22	VARSHA K	III BSc Physics	30	Certified
23	ANSAD KP	III BSc Physics	27	Certified
24	ANSHAD KT	III BSc Physics	35	Certified
25	ARJUN VK	III BSc Physics	31	Certified
26	ASHIMA DAS V	III BSc Physics	26	Certified
27	FATHIMA HIBA PA	III BSc Physics	44	Certified
28	GAYATHRI PK	III BSc Physics	46	Certified
29	MIDULA J	III BSc Physics	45	Certified
30	MUHAMMED ADHILSHAN MA	III BSc Physics	48	Certified
31	NABEEL MP	III BSc Physics	25	Certified
32	PRANAV VE	III BSc Physics	42	Certified
33	SANGEETHA TP	III BSc Physics	32	Certified
34	SHIFANA SHERIN M	III BSc Physics	42	Certified
35	SWATHI KK	III BSc Physics	45	Certified
36	ANSHIDA K	I BSc Physics	40	Certified
37	FASNA M	I BSc Physics	45	Certified
38	FATHIMA ASHIFA	I BSc Physics	43	Certified
39	FATHIMA SALIHA S P	I BSc Physics	38	Certified
40	FATHIMA SHERIN P P	I BSc Physics	35	Certified
41	FATHIMATH SHABANA P	I BSc Physics	49	Certified
42	HAMNA SHIRIN.P	I BSc Physics	42	Certified
43	HIBA NASRIN	I BSc Physics	48	Certified
44	JAHANA T P	I BSc Physics	30	Certified
45	RINCY JESNA A P	I BSc Physics	32	Certified
46	SHAHANA	I BSc Physics	33	Certified

47	SANIYA	I BSc Physics	37	Certified
48	MUHAMMAD ADNAN	I BSc Physics	29	Certified
49	MOHAMMED NAJI K K	I BSc Physics	42	Certified
50	MOHAMMED SHUHAIB K	I BSc Physics	46	Certified
51	MUHAMMAD AFSAL N	I BSc Physics	25	Certified
52	MUHAMMED SUHAIL P	I BSc Physics	40	Certified
53	ARYA M K	I BSc Physics	35	Certified
54	MIDHUNA K	I BSc Physics	32	Certified
55	UMMU HABEEBA P	I BSc Physics	32	Certified
56	MOHAMMED IRSHAD M P	I BSc Physics	38	Certified
57	AHSANA V T	I BSc Physics	35	Certified
58	FATHIMA HANNA K P	I BSc Physics	49	Certified
59	FATHIMA HIBA V P	I BSc Physics	45	Certified
60	FATHIMMATHUL RUMAISHA	I BSc Physics	48	Certified
61	HASNA NASRIN K P	I BSc Physics	25	Certified
62	RABEEHA C	I BSc Physics	42	Certified
63	RAJARAJASREE V K	I BSc Physics	32	Certified
64	RINSHA	I BSc Physics	42	Certified
65	SANIYA ANOOD V	I BSc Physics	45	Certified
66	SHAMSIYA K P	I BSc Physics	47	Certified
67	ADITHYAN V P	I BSc Physics	40	Certified
68	MOHAMMED SUHAIB K P	I BSc Physics	45	Certified



Head of the Department
Department of Physics
MES KEVEEYAM COLLEGE
Valanchery, 676552

SHAJID P P
ASSISTANT PROFESSOR
IN CHARGE OF PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676 552



MES KEVEEYAM COLLEGE VALANCHERY MALAPPURAM | KERALA

NAAC Accredited with A+ Grade
www.meskeveeyamcollege.ac.in

Certificate

This is to certify that

KVM/CC/22-23/

ARYA M. K.

has successfully completed the certificate course on "INTRODUCTION TO NANO FABRICATION
TECHNIQUES" conducted by the Department of PHYSICS, MES
Keveeyam College, Valanchery during the period 2022-23.

K. K. K.

CO-ORDINATOR

K. K. K.

HEAD OF DEPARTMENT

K. K. K.

Dr. K.P. VINOD KUMAR
PRINCIPAL





MES KEVEEYAM COLLEGE VALANCHERY MALAPPURAM | KERALA

NAAC Accredited with A+ Grade
www.meskeveeyamcollege.ac.in

Certificate

This is to certify that

KVM/CC/22-23/

AMRIN A

has successfully completed the certificate course on "INTRODUCTION TO NANO FABRICATION

TECHNIQUES" conducted by the Department of PHYSICS, MES

Keveeyam College, Valanchery during the period 2022-23.

[Signature]

CO-ORDINATOR

[Signature]

HEAD OF DEPARTMENT

[Signature]

Dr. K.P. VINOD KUMAR
PRINCIPAL

