Interns Request for International Internship Program@FSci, KMUTT 2023								
	Department	**Level**	**Fields/Specialization**	**Research Topic / Reseach Area**	**Job Description**	**English Proficiency**	**Special Requirement**	**Internship Experience**
1	Microbiology	Undergraduate 3rd or 4th year or Postgraduate	Microbiology, Biotechnology	Microbiology, Biotechnology	Conduct laboratory research	good		no
2	Microbiology	Undergraduate 3rd or 4th year or Postgraduate Student	prebiotics, enzyme, industrial microbiology	Development of new prebiotics using newly engineered enzymes.	Development of fermentation process. produce and purify the enzyme. Test efficirncy of prebiotic products. Engineer the structure of an enzyme.	good	Good command in English, Love innovation and research work.	no
3	Microbiology	Undergraduate 3rd or 4th year or Postgraduate Student	Biodiversity and molecular ecology of soil microbial communities. Genetics and evolutionary biology of microbial symbionts and their host plants. Molecular phylogeny, systematic and taxonomy of mycorrhizal fungi. Endophytic bacteria and fungi. Plant growth promoting bacteria and fungi.	Biodiversity of arbuscular mycorrhizal fungi. Plant growth promoting bacteria and/or fungi. Endophytic bacteria and/or fungi. Other topics of student's own interest that is related to microbiology.	Per discussion with student upon topic selection.	good	Highly responsible. Able to work independently.	no
4	Chemistry	Undergraduate 3rd or 4th year or Postgraduate (Master's) Student	Chemistry	1. Encapsulation of bioactive compounds and applications in facial serum/cream 2. Monitoring/risk assessment of potentially toxic elements (PTEs) in the environment	Lab work. Training	good		no
5	Chemistry	Undergraduate 3rd or 4th year or Postgraduate Student	Organic Chemistry, supramolecular chemistry	Synthesis of resorcinarene derivatives and amphiphilic chitosan for drug and gene delivery	- Synthesis and characterization of resorcinarene derivatives - Synthesis and characterization of amphiphilic chitosan	good	Require experience in organic synthesis	yes
6	Mathematics	Undergraduate 3rd or 4th year or Postgraduate Student	Algebra and its applications	Evolution algebras, Lie algebras, Applied algebras	- Study some recent works of listed algebras - Make a survey on special cases of the work - Establish some new results of the theory and apply them in some physical problems	good	Really interested in algebra. Experience in algebra courses is optional.	no
7	Physics	Undergraduate 3rd or 4th year	Physics and its Applications in Industry	Physics and its Applications in Industry	Design, assemble, test, collect data, analyze	good		no
8	Chemistry	Undergraduate 3rd or 4th year or Postgraduate (Master's) Student	Natural products, Cosmetics, Medicinal Chemistry and Their Applications	Topic areas in Natural Products, Cosmetics, Medicinal Chemistry and Their Applications	Experiments	good	Listening , reading and writing English well.	no
9	Mathematics	Undergraduate 3rd or 4th year or Postgraduate (Master's) Student	Data science, Data engineering or Machine learning	Developing in Machine learning techniques or tools, Data preparation or Data engineering	study existing techniques in ML, apply to some problems	good	Skills in python programming	no
10	Mathematics	Undergraduate 3rd or 4th year or Postgraduate Student	Differential equations, Dynamical System and applications in modelling	Differential equations, Dynamical System and applications in modelling	-study dynamical analysis of system of differential equations -choose a mathematical model to investigate the dynamical behavior - write the report/presentation	good		no

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11	Chemistry	Undergraduate 3rd or 4th year or Postgraduate (Master's) Student	Chemistry	Electrospun nanofibrous sheet of cellulose acetate doped with a novel fluorophore for the detection of hydrazine.	1. Conducting literature reviews 2. Investigation of the photophysical properties of compounds using UV-vis spectroscopy and fluorescence spectroscopy 1. 3. Using the electrospinning method and scanning electron microscopy (SEM) to study morphology, make a nanofiber sheet of compound 1 mixed with cellulose acetate. 4. Determination of the optimized conditions of compound 1 mixed with cellulose acetate nanofibrous sheet for hydrazine vapor phase detection. 5. Hydrazine vapor detection selectivity and interference 6. Development of calibration curves for gas-state discrimination of hydrazine at various concentrations 7. The sensing mechanism study of compound 1 for hydrazine detection by using 1H-NMR titration HRMS characterization. 8. Detection of hydrazine in real samples by using compound 1 mixed with cellulose acetate nanofibrous sheet.	good		no
12	Chemistry	Undergraduate 3rd or 4th year or Postgraduate (Master's) Student	Analytical Chemistry	Modification of Molecularly Imprinted Polymer (MIP) on Various Substrates for detection of metal ions and endocrine disruptor chemicals in environmental samples.	Find new substrates for modifying such as cotton thread or fiber or different types of polymers. Find new detection system that can be used with the MIP modified substrates such as smartphone-based image analysis or distance-based analysis	good		no
13	Physics	Undergraduate 3rd or 4th year	Physics	Building a Simple Physics Experiment and to be used with students for instructional management and assessment.	Invention of the experimental equipment for expansion of liquids and atomic radius.Making an Instruction to be used for trial with students and test learning outcomes.	good	Interested in educational management, creating experimental and test and evaluate learning outcomes	no
14	Physics	Undergraduate 3rd or 4th year or Postgraduate Student	Physics, material science	Scintiilation materials, Scintillation Crystals, Radiation Detecrion	Photo-Luminescence and Radio-luminescence charaterizations. Radiation Detection study.	good		no
15	Nanoscience and Nanotechnology program	Undergraduate 3rd or 4th year or Postgraduate Student	Scientific Machine Learning	Development of Artificial Neural Networks for Simulations of Charge Transport in Thin-Film Perovskite Materials.	Contribute to the development of artificial neural networks for solving drift-diffusion partial differential equations for charge transport in perovskite thin film. Some parts of the code was written in Python and the trainee will have to work on top of the code to include physical properties of electronic and ionic transport in perovskite. The trainee will also have to validate the simulation results with physics theories and experimental results.	good	Should have basics in Python programming including NumPy, TensorFlow 2.0, and Object-Oriented Programming. Should also have some basics in Machine Learning and neural networks.	yes
16	Chemistry	Undergraduate 3rd or 4th year or Postgraduate Student	Organic Chemistry	Magnetically retrievable catalyst	Prepare, characterize, and test magnetically retrievable catalyst.	good		no

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17	Mathematics	Undergraduate 3rd or 4th year or Postgraduate Student	Optimization (Theory + Practice)	Optimization (Theory + Practice) / Eco-Industrial Park Models	Optimization modeling design / Numerical implementation	good		no
18	Chemistry	Undergraduate 3rd or 4th year	Biochemistry (Enzyme Characterization of South East Asian Fruits and Vegetables, Protein Engineering, Biosensor)	Biochemical and Structural Characterization of Polyphenol Oxidases from South East Asian Fruits and Vegetables to Determine their Catalytic Efficiency on Browning Phenomenon	RNA extraction form Fruit/Vegetable samples cDNA synthesis Cloning of polyphenol oxidase genes Recombinant DNA technology practice Protein expression and purification Protein characterization Kinetic studies of the recombinant Fruit/Vegetable ployphenol oxidase enzymes	good	Good laboratory skills Enthusiastic to learn new laboratory technique Responsible person	no
19	Chemistry	Undergraduate 3rd or 4th year or Postgraduate (Master's) Student	Inorganic chemistry	Design and synthesis of Metal-Organic Frameworks materials for gas adsorption	Synthesis and characterizations	good	knowledge about coordination chemistry, materials characterizations e.g. FT-IR, XRD, UV-Vis	yes
20	Nanoscience and Nanotechnology program	Postgraduate (Master's) Student	Plant Biotechnology, Molecular Biology	Development of Plant-based Biosensor for Heavy Metal Contaminant Detection	- Transform expression vector containing genes in luciferase/luciferin cycle into Agrobacterium - Transform Agrobacterium into a model plant using agroinfiltration techniqu - Compare results between transgenic plants and control	good	Have a basic skills about molecular biology, plant transformation and interested in Sensor Technology	no
21	Physics	Postgraduate Student	Scintillation materials, Transparent ceramics	1.Luminescence and scintillation properties of crystal scintillators 2.Scintillation characteristics of transparent ceramics	Experimental work: Characterization of luminescence properties (spectrum and decay time) and scintillation properties (light yield, decay time) of scintillation materials.	good	Student should have background in an introductory in solid state physics, nuclear and radiation physics, as well as lab experience in UV-Vis spectrometer	yes
22	Physics	Undergraduate 3rd or 4th year	Applied physics , optics	To design a low-cost Michelson interferometer using a DVD pickup. Observation of the interference fringes for different wavelengths (red,blue laser diodes)	- Design a Michelson interferometer using a DVD pickup. The mirror will be moved axially by changing the current. - Build a circuit that will be used for controlling the input current as a function of the input voltage - Using a small program written in Python (the core of the program will be available) to record the images of the interferences. - Estimate the wavelengths of the light sources	good	Arduino or Raspberry-Pi knowledge , Python programming	yes
23	Physics	Undergraduate 3rd or 4th year	physics/computer science	Quantum Escape Room (Tangible Game Based for Learning Quantum Computing)	The trainee will work together with a team of researchers (both computer engineers and physicists) as well as some undergrad and master students to create an educational game in the format of an "escape room" to deliver some basic concepts in quantum computing to the participants. The scope of the work will be ranging from gathering and analyzing data to design the game and prepare some demonstrations.	good	Understand a little bit of quantum computing	no
24	Microbiology	Postgraduate (Master's) Student	Molecular Biology/Protein Engineering	Protein experssion and purification of SAR-CoV-2 proteins.	Expression of SAR-CoV-2 in E.coli and purify protein by using histidine taq Affinity chrommatography.	good		yes
25	Mathematics	Undergraduate 3rd or 4th year or Postgraduate Student	Mathmatics,Applied Mathematics, Financial Mathematics , Statistics	Option and Warrant Pricing	Students are assigned to study research papers relaled to the topics. Student will be assigned to compute option/warrant prices via a mathmatical software.Discussions and analytical skills are needed in this work.	good		no