UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

FAKULTI PERUBATAN DAN SAINS KESIHATAN
Faculty of Medicine and Health Sciences

Our Ref : FMHS/2015/9/GS23922
Date : 7 September 2015

Chairman, CPIH Board
(Zainal Mubarik Zainuddin, CPIH)
Malaysian Industrial Hygiene Association (MIHA)
No 19A, 1st Floor, Jalan 2/14,
Bandar baru Selayang, 68100
Batu Caves, SELANGOR D.E
MALAYSIA

Dear Sir,

LETTER OF VERIFICATION FOR MASTER OF SCIENCE OCCUPATIONAL HEALTH AND SAFETY (SYAZWAN AIZAT BIN ISMAIL, IC: 860911-23-7085)

We refer to the above matter and are pleased to verify that Mr. Syazwan Aizat Ismail (860911-23-7085) was a student under program of MSc (Occupational Health & Safety) and had completed his Master degree as stated on his transcript.

He has been working with his Master thesis and enrolls industrial hygiene relevant subject and professional attachment as presented in **Attachment 1** of this letter. His professional experience/s during Master degree program and publication exercise of relevant scientific article related with industrial hygiene field was very impressive.

If you have any further questions, please do not hesitate to contact undersigned.

Thank you,

"With Knowledge We Serve"

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DR. NIZAR ABD MANAN
Senior Lecturer/ Academic Advisor
Faculty of Medicine and Health Sciences

CC Syazwan Aizat Ismail
Allied Health Science College Sungai Buloh,
Ministry of Health Malaysia, Jalan Hospital
47000 Sungai Buloh,
SELANGOR

Attachment 1

Name: Syazwan Aizat Bin Ismail
Current Position: Tutor (Environmental & Occupational Health), Ministry of Health

Detail about the broad Industrial Hygiene subject covers during Master's Degree Subjects

No.	Subject Name	Description Detail	Content	Assessment/ Activities/ Subject	IH Rubric Covered
1.	Occupational Health and Safety Management System (EOH5202)	This course offer by the faculty to give the student/s knowledge and practical exercise the work related to the non-engineering control for occupational health/ occupational hygiene issues and relevant standard related to the occupational environment. This subject mean for applying the knowledge of the maintaining work safe environment by following the appropriate standard. This course contains element of description and recognition of hazard in different type of work environment and industrial processes. This subject also covers (but not limited to) the principles and requirements for the interpretation and use of guidelines for the assessment of health hazards, including	The student was review the document, understanding the risk reduction process including the hierarchy of controls, control banding and hazard communication and training of Employees are included. Student also performed advance communication of recommendations by appropriate techniques to implement control actions were also conducted during this course. This include health promotion program related to the occupational hygiene issues, understanding of occupational epidemiology and occupational medicine issues. Student also being taught about the relevant topics regarding industrial/ occupational hygiene	The activities conducted as follows: Auditing the relevant protocol for meeting the standard required, investigation methods for accident/ incident and relevant occupational toxicology cases, data Management and analytical analysis for occupational hygiene related data (hearing conservation program) and integration, establishment of policy, planning, delegation of authority, accountability, risk communication, organizational structure and decision making.	i. Basic sciences; ii. IH Program management iii. Work environment and industrial processes. iv. Health Risk Analysis and Hazard Communication v. Non Engineering Controls

		American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Biological Exposure Indices (BEIs) and industrial ventilation guidelines, American National Standards Institute (ANSI) standards, American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) guidelines, American Society for Testing and Materials (ASTM) standards, and National Institute for Occupational Safety and Health (NIOSH), relevant Malaysian Act, Regulation and standards.	management. This includes the ability to allocate and control of resources to accomplish industrial hygiene anticipation, recognition, evaluate and control occupational hazard in timely manner. Student required conducting specific case study to evaluate the system of monitoring occupational health/ hygiene issues in workplace. This reflects to the knowledge of sampling, exposure assessment, risk characterization and risk control for occupational health hazards.		
2.	Special Topics (PSK5905)	This subject was specialized design to assist student in enhancing/ develop their interest/ skill in required competency (occupational health and safety). This subject organizes by supervisor in relation to build up good connection and skill based program for students exposure related to occupational hygiene field.	This subject required the student to perform special topics relevant to the occupational health issues. There were more than 5 different mini study had been performed during this course to enhance/ strengthen the occupational hygiene skills. The critical element consists of applying the basic	During this course the student also involve directly with the specific training for the ventilation assessment conducted by accredited industry. This course requires student to performed occupational health attachment/ training to specific organization/ unit for the time contact for the occupational hygiene practices.	i. Community Exposure ii. Work Environments and Industrial Processes iii. Air Sampling and Instrumentation

		This subject encourages the concept of professional attachment/ candidature status of hygiene involvement for the benefit of the skill based curriculum. The general content to be covered in this subject/ code include the topics relevant to occupational hygiene professional but not limited to as follows: i. Ergonomics (applied ergonomics for the competency based for part of master project); ii. Occupational hygiene monitoring for chemical exposure (solvent based) and biohazard (air quality investigation) iii. Physical hazard monitoring (noise, Electromagnetic, Heat/ Extreme temperature) iv. Hazard, risk management and control of hazard/	knowledge for the basic science, epidemiology, and toxicology and had skill for occupational hygiene monitoring/ study. During the duration of several months in the master program, student had been attach with the private firm as external consultant/ scientist for the relevant occupational hygiene exercise in oil and gas industries. The exercise includes the real process of occupational hygiene assessment conducted in workplace with the collaboration effort from external Occupational Hygiene Consultant Firm (ERALAB Sdn Bhd). This include the exercise of noise monitoring, health risk assessment, vibration study, indoor air quality study, general and local exhaust ventilation testing/ assessment. Student also involve in Naval exercise specialized training as	Student also involve Naval Specialized (TLDM) training related to the specialized work environment hazard such as follows (but not limited to): i. Confine space entry ii. Working procedure related to pressure hazards iii. Fire and chemical spill management iv. Breathing apparatus related to the PPE/ testing the PPE v. Basic life support vi. Chemical management (spillage/ protection) This subject uniquely evaluated based on the mini project conducted and evaluation done by the peer review process by different professional evaluating the professional report/ technical knowledge of the students.	

		intervention taken to reduce specific hazards. v. Engineering control (LEV/ General Ventilations)	competency based/ practical based assignment for the application of knowledge.		
3.	Master's Research (SPS5999) (9)	This subject specialized in giving the students exposure to the practical attachment related to the master's project and field of interest (occupational hygiene) in relation with the master's degree. During this subject, student went to the work environment (in this case, educational setting workplace as primary aimed of the hazard analysis). The student collect own data with minimum supervision by the supervisor related to the master project/ research.	The process of this master's research include: i. Pilot study (preliminary study of the environmental hazards) ii. Data collection (occupational/ environmental hazards) related to the educational environment in Malaysia (based on selected school) iii. Application of economics in analyzing the risk factor related to musculoskeletal pain among respondent; iv. Utilizing and using the principle of occupational hygiene in controlling identified hazards; v. Conducting the control measures	The student conduct study based on selected and pre-determine objectives with the clear evidence of utilizing occupational hygiene approach in anticipate, recognize and evaluate thus conduct appropriate and cost effective way of controlling hazards in educational environment.	i. Basic Science; ii. Health Risk Analysis and Hazard Communication iii. Ergonomics

			including engineering control (by designing new furniture and testing the anthropometric of the students); vi. Conduct control measures related to non-engineering measures (health promotion related to the ergonomics hazards) vii. Application of epidemiology and biostatistics for data analysis for effectiveness study.		
4.	Advance Industrial Hygiene (EOH5203)	This subject focus on the topics related to industrial hygiene field in the practical manner. This compulsory subject is the core of the content to test, evaluate and assess the competency level of the student in occupational hygiene practices. Students will plan the occupational hygiene sampling (all related hazards) and perform occupational hygiene	Consist of problem based learning related to occupational hygiene assessment, data collection and data analysis for epidemiological investigation. During this course, students are required to produce industrial hygiene report related to occupational hygiene monitoring exercise. During this course, students ask permission for specific	The assessment (application of knowledge and skill of instrumentation and data analysis) include the professional report make up and data collection from occupational hygiene assessment related to the hazards as follows: • Physical (including non-ionizing radiation); • Chemical (air monitoring of chemical in different sector [mining and factory]) • Biological (including biohazard analysis of risk in	i. Air Sampling and Instrumentation ii. Engineering Controls/Ventilation iii. Noise iv. Radiation/Ionizing v. Radiation/Nonionizing vi. Thermal Stressors vii. Community Exposure viii. Biohazards

		sampling during the period given of time. This subject was the advance subject from previous bachelor program, where the students required conducting the occupational hygiene monitoring, data analysis and reporting writing. Student also need to competent to conduct the air sampling protocol as guided by ACGIH, NIOSH and relevant standards/ protocol. This subject also covered the non-engineering control and strategies for managing occupational environment hazards. This includes the qualitative fit test for respirator, quantitative respirator test, breathing apparatus specification and related PPE.	industries (mining, manufacturing and others) for occupational hygiene monitoring for specific hazard analysis. Students then perform analysis of sample for hazard related to the dust, chemical (organic chemicals) using analytical chemistry technique. During this course, student exposes themself with the occupational environment and conduct general and specific occupational hygiene monitoring. The continuation of this course includes the control and testing of the engineering control according to specification. This includes the monitoring of LEV system, understanding the calculation, design and workability of the general and local exhaust ventilation system.	the medical laboratory); • Ergonomics (covers all related topics about human factor engineering, include biomechanics and posture analysis); • Psychosocial (related to the hazard analysis in the community, workers and relevant group of occupations related to occupational psychology) Relevant details covered during this subject examples and the practical/ assignment (individual) as follows: i. Heat stress assessment in mining industries ii. Indoor air quality assessment at selected offices iii. Ergonomic assessment in electronic manufacturing company iv. Biohazard assessment for medical laboratory (Histopathology, Microbiology, Pathology and Toxicology Labs); v. Local exhaust ventilation assessment for engineering control in occupational	

				setting (labs, agriculture industry and manufacturing); vi. General ventilation assessment in medical laboratory (UPM); vii. Chemical health risk assessment (CHRA); viii. Health Risk Assessment (HRA); ix. Noise assessment and audiometric measurement among factory/ general workers (comparison study); x. Vibration assessment for whole body and hand arm vibration for the transportation industries xi. Radon study in MINT (Malaysian Institute Nuclear Technology) (Bangi), sampling of the radon in the occupational setting. xii. Study of aerosol science in mining (Hanson Quarry Sdn Bhd)	
5.	Analytical Techniques in Environmental Studies (ESC5012)	This course design to provide the students with knowledge, and lab based skill related to analytical chemistry for environmental/ occupational	This class has significant time for laboratory based analysis and practical training session for environmental students.	This module consists of practical, laboratory work and field assessment conducted by the candidate. The student was performed intermediate analytical	i. Analytical Chemistry ii. Biostatistics & Epidemiology iii. Toxicology iv. Basic sciences

		environment samples. This course also talks/ discuss about the community exposure, toxicology and work/ process related exposures. A student was conducting analytical measurement/ analysis using scientific instrument such as Gas Chromatography Inductive Copper Plasma, Atomic Absorption Spectrophotometer and others. The measurement of specific concentration of the substances during the analysis was performed and interpreted accordingly. The samples were taken by the student as their work assignment and being supervised accordingly to produce analytical result. This class/ subject have 3 major components: 1. Analytical chemistry 2. Data analysis/ modeling of	Students required collecting samples based on objectives given and the analytical chemistry method was applied to obtain the concentration of the samples relevant to the exposures. The student also performed data analysis of the samples taken by previous epidemiological data to train/ master the data interpretation, data screening/ industrial hygiene data management and relevant protocol for scientific writing.	chemistry application in determining the level of chemical exposures (related to organic contaminants) during the period of laboratory of conduct. The interpretation of the result and the data analysis consist of component where the students critically write an article for journal publication/ review the article from the journal. The exercise taken for this subject includes the sampling protocol for different type of occupational / environmental exposure related to human health. The example of the pollutants includes study of organic solvents and hydrocarbon in the occupational/ environmental exposure.	

		environmental/ occupational health exposure; 3. Epidemiology and biostatistics (related to community exposure from the emission of the substances, toxicology of the substance by affecting human health and relevant changes to the work process for reducing hazards exist)			
4.	Seminar Research Proposal (SPS5903)	This course focus on the medical ethic clearance for conducting research related to the occupational health application of knowledge.	Student build proposal and submit to the medical ethic committee for proposal defense. This includes the technical knowledge about the research content.	The research propose was using the occupational hygiene technique namely anticipation (using scientific method for screening hazard in educational setting), recognition of hazard (by technically calculate the hazard index in the educational environment), evaluate (measures technically the exposure of environmental/ occupational hazards in educational set up), and control (the usage and development of the new approach using non-engineering control (tested method with scientific merit/ award winning invention) by	i. Community Exposure ii. Ergonomics iii. IH Program Management iv. Health Risk Analysis and Hazard Communication

				conducting administrative measures related to health promotion)	
5.	Master's Research (SPS5999) (9)	This course specialized in applying the principles of research methodology to conduct scientific research relevant to the application of occupational hygiene technique.	This period the student already conduct the data collection process, thus proceed with the scientific writing relevant to the field of occupational/ environmental health.	The students produce more than 5 international scientific article for only this master's research project include the pilot and preliminary study relevant to the field of occupational hygiene.	i. Community Exposure ii. Ergonomics iii. IH Program Management iv. Health Risk Analysis and Hazard Communication

Detail about the broad Industrial Hygiene subject covers during Master's Degree Project

No.	Subject Name	Description Detail	Content	Assessment/ Exercise	IH Rubric Covered
1.	Master's Research (SPS5999) (12)	The title of the master thesis was "Evaluation of two ergonomic intervention programs in reducing ergonomic risk factors contributing to musculoskeletal pain among school children". This public health research conducted using scientific, epidemiological and occupational hygiene approach in achieving the primary objective of the study.	This study being divided by few stages include risk characterization by conducting preliminary survey of the community exposure related to the hazards, occupational health issues in the educational facilities and focusing on the specific issues for early mitigation measures/ intervention program. Summary of overall project include: i. Air monitoring exposure among educational community ii. Risk characterization using semi-quantitative measurement in educational setting; iii. Ergonomic risk assessment; iv. Chemical	This project apply many principles of occupational hygiene/ competency rubric include (but not limited to): i. Application of the ergonomic study to prevent musculoskeletal pain among respondents; ii. Development of the ergonomic intervention package (engineering/ human factors concept in biomechanics) for the intervention package; iii. Community exposure related to the stressor/ hazards in educational setting; iv. Occupational hazard relevant to the educational setting includes the air quality, confine space/ dangerous workplace in educational setting. v. The workplace/ environmental setting assessment/ study conducted for the improvement for example illumination study for the work areas, color preferences and posture analysis. vi. The student apply/ synthesis	Almost all the knowledge applies in this duration to complete the part of project including the primary 17 parts of IH main rubrics (based on ABIH recommendation).

			exposure monitoring related to respiratory illness among respondents; v. Physical stressor assessment (include illumination study, physical hazards such as noise, heat and others)	the knowledge of epidemiology and biostatistics in data analysis for the experimental study.	
2.	Master's Research (SPS5999) (12) continue	This subject/ code focus on the technical part of the master's degree. This subject focuses on the level of creation according to the bloom taxonomy of learning and psychomotor in the highest level. This subject requires students to develop specific scientific write up and published in international/ national journal about OSH/ IH field.	This is the end of the master's degree part of this MSc (OSH). Student presents the relevant study using platform of international or national seminars. Student Published more than 4 articles related to the field of occupational hygiene in the international journal in the reviewed article.	Thesis defense and viva voce Student presented the 4 article published and one article intended to be submitted in the viva-voce. Student able to apply and develop new thing in the body of knowledge for industrial hygiene	Almost all the element of general rubric of IH covered during this project (as the project utilizes the component of IH to mitigate hazard analysis and control). Student successfully shown competency, professional ethics and full of knowledge in the context of applying occupational hygiene professional work in the field and academic world.

Master's Project includes:

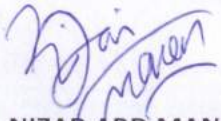
No.	Component/ Content	Detail Explanation
1.	Preliminary study/ Baseline study	Student conduct multiple hazard analysis in the educational setting include: i. Air quality study in working environment (this include the indoor air quality assessment) ii. Physical stressor assessment (include the evaluation of specific physical hazard exist in the educational environment) iii. Biohazard monitoring include the process of sampling microbes relevant to the indoor biological hazard exposure iv. Chemical health risk relevant to the exposure of respondent in educational environment v. Health and safety audit/ hazard identification process using quantitative analysis vi. Conduct the ergonomic risk analysis among the respondent in the educational environment vii. Analysis of preliminary data relevant to occupational and environmental epidemiology of the hazard exist in school viii. Hazard characterization process to focus on the specific mitigation for the significant hazard
2.	Reliability/ Validation of Study	Student further conduct the validation process this include: i. Reliability and validation for internal consistency of the relevant instrument for ergonomic study (the ergonomics and indoor environmental hazards show significant health effect in health determinants); ii. Baseline study for calibrating the instrument relevant to the occupational/ environmental hazard analysis; iii. Data analysis using statistical analysis for the exposure of relevant hazards in educational facilities and training of the relevant research assistant for data collection process.
3.	Occupational hygiene application	Students must show significant occupational health/ occupational hygiene in the context of knowledge application/ strategies in managing occupational/ environmental hazards in specific educational environment. This include: i. Specific study on the hazard analysis related to risk management in educational facilities; ii. Relevant air quality and indoor environmental hazard analysis iii. Anthropometric evaluation of the respondents during the detail assessment of the study iv. Hazard analysis using quantitative ”task analysis” procedure using postural analysis in the assessment/ evaluation of the hazards; v. Sampling and technique for reducing systematic error in occupational hygiene assessment/ protocol during the research data collection process; vi. Application of the instrument relevant to the ergonomics, ventilation, indoor environment and physical hazard relevant to educational facilities. vii. Evaluation of epidemiological data collected during the baseline data collection; viii. Management/ Control of specific mitigation means to reduce the risk related to occupational/ environmental hazards exist in the educational environment.

4.	Technical Component	Student shows ability to demonstrate practical application of the occupational hygiene technique in reducing risk associated with the occupational problem. This include: i. Reduction of the reported cases in the experimental study; ii. Comparison of the control and experimental group using engineering and non-engineering solution for ergonomics issues; iii. Comparison of control and experimental group using engineering and other method for indoor environmental issues in educational facilities, this include designing and evaluation of ergonomics hazard relevant to the environment; iv. Application of the laws/ regulation and OSH component in controlling the hazard to minimize the impact to health of the human populations; v. Advance analysis for evaluation of differences in comparing the different type of intervention/ experiment conducted to the sample populations; vi. Scientific writing for publication exercise;
5.	Occupational hygiene merit/ detail rubrics covered	Student already undergoes the series of formal classes including practical and professional attachment by evaluating the practical skill, knowledge and understanding of the occupational hygiene components. The student able to perform scientific study relevant to occupational hygiene field in the context of physical, chemical, ergonomics hazards in general. Student also shows ability to produce quality and non-bias study due to the fact that the study / project able to be accepted/ considered for publication in the international journal during the student are candidature. This show the quality of the study and the importance of the study.

Professional comment:

Based on the record, this student able to apply/ synthesis the knowledge of occupational hygiene in holistic manner, the advantages include the core subject taken in line with the research focus in occupational safety and health/ occupational hygiene field. Beside good evidence of scientific conduct (based on publication of more than 5 articles for this research specific research only and more than 15 article during the candidature period all in the context of occupational hygiene and environmental health) and numerous practical and professional report produce, this student shown suitable competency to become professional occupational hygiene. Student also shown competency by obtained recognition from DOSH for competency in numerous field. Student also successfully conducts professional attachment in successful manner during field attachment.

Verified by



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