UNIVERSITY OF THE PUNJAB

NOTIFICATION

It is hereby notified that the Syndicate at its meeting held on 27-07-2023 has approved the recommendations of the Academic Council made at its meeting dated 24-05-2023 regarding approval of the Revised Syllabi and Courses of Reading for M.Phil Occupational Health & Safety under Semester System at the College of Earth and Environmental Sciences w.e.f. the Academic Session, 2022 and onward.

The Revised Syllabi and Courses of Reading for M.Phil Occupational Health & Safety under Semester System is attached herewith as Annexure 'A'.

Sd/-
REGISTRAR

Admin. Block,
Quaid-i-Azam Campus,
Lahore.

No. D/ 7661 /Acad. **Dated: 11-10 /2023.**

Copy of the above is forwarded to the following for information and further necessary action: -

1. Dean, Faculty of Geo Sciences.
2. Principal, College of Earth and Environmental Sciences.
3. Controller of Examinations
4. Director, IT for placement at the website
5. Admin Officer (Statutes)
6. Secretary to the Vice-Chancellor.
7. PS to the Registrar.
8. Assistant Syllabus.

Assistant Registrar (Academic)
for Registrar

COLLEGE OF EARTH AND ENVIRONMENTAL SCIENCES
UNIVERSITY OF THE PUNJAB, LAHORE

Approval of Revised Courses & Syllabi for
M. PHIL. OCCUPATIONAL HEALTH & SAFETY

The curriculum and courses for M.Phil. in Occupational Health & Safety were approved in the year 2018 from various statutory bodies of the University of the Punjab.

Presently College of Earth and Environmental Sciences intends to revise the courses & syllabi keeping in view the advancements in the field of Occupational Health & Safety. Most of the courses have been designed according the latest trends of the subject that can provide an interest to the students and later help them for competing in the job market.

Program Title: **02 Year M. Phil. Occupational Health & Safety**

Department: **College of Earth and Environmental Sciences**

Faculty: **Geo-Sciences**

1. Department Mission

Our mission is to find suitable and sufficient solutions to occupational and environmental issues through strategic research and planning on the grounds of ongoing projects. The basic goal is to protect workers as well as public health using green technologies. As occupational health and safety, environmental sciences, hydrology and geomatics are professional degrees, the College seeks to provide education and training in the multiple dimensions of contemporary occupational health safety and environmental issues toward developing solution for a more sustainable future.

2. Introduction

Keeping in view the importance and the growing demands for training manpower in the emerging discipline, the College of Earth and Environmental Sciences has been established in the University of the Punjab in 2005. The new building of the College was completed in November 2008, featuring spacious rooms, moderately equipped laboratories, a library and large grounds.

College of Earth and Environmental Sciences provides a learning educational environment to students with the opportunities to acquire knowledge and skill to build a successful career and

become an integral part of the community. Students will study different aspects related occupational health and safety such as industrial hygiene, occupational toxicology, noise control, ergonomics, fire safety and emergency preparedness etc. Moreover, theoretical and practical education is given in the field of environment including climate change, geospatial applications, agro-biodiversity, environmental management, pollution and control, population dynamics, ecosystems and urbanization. Provision of high-quality education is the integral part of the college to produce graduates of international standards. Furthermore, ethical and moral standards, developing leadership capabilities and professionalism are the main goals of the college of earth and environmental sciences.

3. Program Introduction

The M. Phil. program in Occupational Health and Safety (OHS) will be offered at the College of Earth & Environmental Sciences (CEES), University of the Punjab, Lahore to prepare students to demonstrate knowledge and competence in the OHS discipline such as industrial hygiene, occupational safety, ergonomics, safety management and environment. The academic program at CEES will provide a comprehensive, broad-based educational background to prepare field-oriented and academically sound graduates for entry-level and advanced positions in the health, safety, and environment profession in the public and private sector. The program is designed to provide the technical and professional knowledge required by individuals pursuing careers in occupational safety, health safety and environment, industrial hygiene, loss / risk control management, ergonomics, fire safety and emergency planning and response.

4. Program Objectives

The objectives of M.Phil-OHS program are::

1. To prepare graduates articulated in applying their broad educational background in science, technology, and management as OHS professionals at local, national, or international levels in industry, government, or academia to solve problems;
2. To produce critical thinkers to anticipate, identify and evaluate hazardous conditions and practices, and implement effective hazard control strategies in such areas as accident prevention, safety management, occupational health, industrial hygiene, loss/risk control management, ergonomics, emergency planning and response.;

3. To prepare effective communicators and ethical leaders within the OHS profession; and

4. To motivate life-long learning and effectively practice in this rapidly evolving, continually changing and increasingly diverse discipline.

5. Market Need / Rationale of the Program

M.Phil-OHS program is designed to provide the technical and professional knowledge required by individuals pursuing careers in occupational safety, health safety and environment, industrial hygiene, loss / risk control management, ergonomics, fire safety and emergency planning and response. The mission of M.Phil-OHS program includes:

- Providing quality education and skills to prepare best graduates possible to serve as health, safety, and environmental professionals in this challenging field;
- Placing a high premium on academic excellence, along with collaborative relationships with business and industry, government agencies and other universities at home and abroad.
- Emphasizing student-centered learning and field experiences such as internships, field visits, community service and membership in professional organizations to enhance academic experience.
- Mentoring students in conducting original scientific research on ohs issues, encouraging presentations in international scientific conferences and publication in journals;
- Preparing graduates to function in culturally and technologically diverse areas who can interact locally and globally.

6. Admission Eligibility Criteria

- B.S. / M.Sc. Environmental Sciences/ B.Sc. Engineering / B.S/MSc. Natural/Life/Physical/Earth Sciences), MBBS, PGD in OHS with 16 years of education or Equivalent.
- No third division in the whole career.
- CGPA on a scale other than 4.00 will be converted accordingly.

7. Duration of the Program

The CEES is following the HEC guidelines and M. Phil degree is awarded by the university after a minimum of two (2) years period. Total number of courses taught in M. Phil will 11including 32 credit hours total with 04 semesters, 13 credit hrs in each semester. After successful completion of course work, students' have to conduct thesis/research work having 6 credit hours.

The college designated competent authority (DDPC) to determine whether the delay is caused by circumstances beyond the student's control and if so, grant an extension for two years in such exceptional circumstances. The date of notification of the award of the M. Phil degree after the MS/M. Phil defence is considered to be the date of the completion of M. Phil studies.

Categorization of Courses as per HEC Recommendation and Difference

Semester	Courses	Category (Credit Hours)					
		Core Courses	Basic Courses	Major Electives	Minor Electives	Any Other	Semester Load
1	5	3	-	10	-	-	13
2	6	3	-	10	-	-	13
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
HEC Guidelines	-	12	-	6	6	-	24
Difference HEC & PU	-	6	-	20	0	-	26

5. Scheme of Studies / Semester –Wise Workload

FIRST SEMESTER*:* **(*13 Credit Hours)***

Sr. No.	Course Code	Course Title	Course type	Pre-requisite	Credit Hours
		CORE-COURSES ***(06 credit hours core-courses will be offered in 1st semester)***			
1.	OHS-515	Introduction to Occupational Health & Safety	Core-Course	B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD	03+0
2.	OHS-516	Principles of Industrial Hygiene and Occupational Toxicology	Elective Course	B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD	02+01
3.	OHS-517	Fundamentals of Ergonomics and Noise Control	Elective Course	B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD	03+0
4.	OHS-518	Occupational Health & Safety Standards (Elective Course)	Elective Course	B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD	02+0
5.	OHS-519	Industrial Waste Management Practices	Elective Course	B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD	02+0

SECOND SEMESTER **(*13 Credit Hours)***

Sr. No.	Course Code	Course Title	Course type	Pre-requisite	Credit Hours
		CORE-COURSES *(06 credit hours core-courses will be offered in 2nd Semester)*			
1.	OHS-520	Research Methods in Occupational Health & Safety	Core-Course	OHS-515, OHS-516	03+0
2.	OHS-521	Occupational Health and Safety Auditing & Project Management	Elective Course	OHS-515, OHS-516	02+0
3.	OHS-522	Fire Safety and Emergency Preparedness (Elective Course)	Elective Course	OHS-515, OHS-516	02+0
4.	OHS-523	Occupational Health and Safety Issues in Oil & Gas Industry (Elective Course)	Elective Course	OHS-515, OHS-516	02+0
5.	OHS-524	Occupational Health and Safety in Construction Industry (Elective Course)	Elective Course	OHS-515, OHS-516	02+0
6.	OHS-525	Biosafety and Biosecurity (Elective Course)	Elective Course	OHS-515, OHS-516, OHS-517, OHS-518	02+0

3rd & 4th Semester (Thesis): **(*06 Credit Hours)***

Sr. No.	Course Code	Course Title	Credit Hours
THRID & FOURTH SEMESTER			
1.	OHS-601	Research and Dissertation (Viva Voce Examination)	06

10. Award of Degree

As a requirement, 02 Year MS/ M. Phil degree will be awarded on the successful completion of courses & syllabi and research thesis with minimum required CGPA 2.5/4.00. After completing course work, the student is officially allowed to start the research and DPCC evaluates the projects and refers to the advanced research board. Each MS/ M. Phil researcher is required to write a thesis that meets the HEC defined criteria. The MS/ M. Phil thesis is supervised by a full-time faculty member who holds a Ph.D. (or equivalent) degree. The MS/ M. Phil thesis is evaluated by the committee member and by at least two external experts. Further, a plagiarism test following the HEC's Plagiarism Policy is conducted on the thesis before its submission to the external experts. An

open defense of the thesis is required after a positive evaluation of the thesis by the committee members.

NOC from Professional Councils (if applicable)

Not Applicable

11. Faculty Strength

Degree	Area / Specialization	Total
PhD	1. Prof. Dr. Sajid Rashid Ahmad 2. Prof. Dr. Irfan Ahmad Shaikh 3. Prof. Dr. Nadia Jamil 4. Dr. Abdul Qadir 5. Dr. Yumna Sadef 6. Dr. Muhammad Kamran 7. Dr. Muzaffar Majid Ch. 8. Dr. Azhar Ali 9. Dr. Sana Ashraf 10. Dr. Muhammad Bilal Shakoor 11. Dr. Naeem Akhtar Abbasi 12. Dr. Mehwish Mumtaz 13. Dr. Muhammad Awais 14. Dr. Rizwan Aziz 15. Dr. Muhammad Asif Javed	**15**
MS / M.Phil.	16. Mr. Muhammad Waqar 17. Mr. Muhammad Dastgeer 18. Ms. Zahra Majid 19. Ms. Anum Tariq	**04**

12. Present Student Teacher Ration in the Department

19: 15 1:1

FIRST SEMESTER

OHS - 515 INTRODUCTION TO OCCUPATIONAL HEALTH & SAFETY (03 Credit hours)

PRE-REQUISITE: B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD

Course learning outcomes

After successful completion of this course, students will be able to:

1. learn basic understanding of potential workplace safety and health hazards and determine how to mitigate the hazards through engineering controls, administrative controls, and personal protective equipment.
2. identify and demonstrate a working knowledge of the occupational health and safety regulations.
3. conduct basic safety inspections using strategies that has been developed though hazard identification, job hazard analysis and risk assessment.
4. review the principles for developing and implementing a successful occupational health and safety program and evaluation of a work site.
5. identify the major historical events that influenced accident prevention activities in the pre/post industrial revolution.
6. ensure involvement of management in safety and health program implementation including management commitment, employee involvement, hazard recognition and control and training.

Contents

This course is a foundation of Occupational Health & Safety covering all basic areas of this discipline, such as occupational safety, industrial hygiene, ergonomics, etc.

Unit-I Introduction

1.1 Introduction of occupational health & safety
1.2 History of health and safety
1.3 Evolution of health and safety standards,
1.4 Industrial hygiene
1.5 Role of national/international agencies

Unit-II Elements of Occupational Health and Safety

2.1 Elements of ILO-OSH 2001, elements of OHSAS 18001,
2.2 Elements of ISO 45001,
2.3 Features and Contents of OHS policy

Unit-III Health & safety culture

3.1 Concept and significance of Health & safety culture
3.2 Factors influencing safety related behavior and improving such behaviors

Unit-IV Planning and Implementation

4.1 Principles and practice of risk assessment, Hierarchy of controls, Personal protective equipment.

4.2 Electrical safety, Confined spaces, Impact of temporary works,

4.3 Permit to work system,

4.4 Physical and psychological health hazards and risk control,

4.5 Emergency preparedness,

Unit-V **Inspection and Audit system**

5.1 Inspection system,

5.2 Safety audits

5.3 Reporting systems

5.4 Management review

Unit-VI **Special hazards**

6.1 Hazardous substances and health effects,

6.2 Toxicology and importance of material safety data sheet,

6.3 Lock out/tag out, Work at height,

6.4 Fire safety, Ergonomics/musculoskeletal disorders and risk control

6.5 Occupational noise control

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS:

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Hughes, P., & Ferrett, E. (2021). *Introduction to Health and Safety at Work: For the NEBOSH National General Certificate in Occupational Health and Safety*. Routledge.
2. Kalitanyi, V. (2021). Green Health and Safety Management System. In *Human Resource Management Practices for Promoting Sustainability* (pp. 176-196). IGI Global.
3. Friend, Mark A., and James P. Kohn. (2018). *Fundamentals of Occupational Safety And Health. Rowman and Littlefield.*
4. David L. Geotech, (2015). *The Basics of Occupational Safety, 2nd Edition*, Pearson Education, Inc.
5. Kelloway, E. Kevin, Karina Nielsen, and Jennifer K. Dimoff, eds. (2017). *Leading to Occupational Health and Safety: How Leadership Behaviours Impact Organizational Safety and Well-Being*. John Wiley and Sons.
6. Brauer, Roger L. (2016). *Safety and health for engineers.* John Wiley and Sons.

OHS-516: PRINCIPALS OF INDUSTRIAL HYGIENE (ELECTIVE) (02 Credit Hrs)

PRE-REQUISITE: B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD

Course Learning Outcomes

1. Describe the nature of the health effects associated with exposure to industrial agents;
2. Be familiar with the standard methods for measuring and evaluating worker exposure to chemical and physical agents and identify strengths and weaknesses to typical approaches;
3. Apply and interpret health and safety standards and regulations for the work place environment;
4. Apply feasible approaches to controlling worker exposure to health and safety hazards to a specific industrial setting.
5. Describe how the social and economic context of work affects workers' and employers' ability to control threats to health and safety.

Contents

The course provides introduction to the principles and practices of occupational hygiene for students. Occupational hygiene role in *Anticipation, Recognition, Evaluation, and Control* of work place hazards to health and safety. All these functions require a sound understanding of industrial toxicology, methods of exposure measurement, behavior of chemical and physical agents in the body, the application of guidelines and standards, and technical and administrative approaches for controlling risks from such exposures.

Theory

Unit-I Introduction

1.1 Introduction to occupational hygiene, Recognition, evaluation, and control of industrial hazards due to chemical and physical agents.

1.2 Brief History of Occupational Hygiene

1.3 history of IH,

1.4 biological and radiological hazards;

1.5 toxicology of chemicals,

1.6 routes of entry, exposure, dose and risk, safety data sheets (SDS)

Unit-II Description of related standards

1.1 Occupational hygiene standards

1.2 Industrial hygiene and monitoring techniques,

1.3 Indoor air quality,

1.4 Occupational health standards,

1.5 Regulatory requirements,

Unit-III Exposure and hygiene issues

3.1 Effects of contaminants on human health,

3.2 Sampling and control of hazards,

3.3 Current issues,

3.4 Exposure, dose and risk,

3.5 Guidelines and regulations,

3.6 Deriving a standard,

Unit-IV Monitoring and control

4.1 Measurement of gases and vapors, particulate matter,

4.2 Direct reading instruments and measuring exposures,

4.3 Exposure assessment, exposure data and statistics, Exposure models and control banding,

4.4 Biological monitoring, Interpreting monitoring data, lead battery mfg., controls and management,

4.5 Hierarchy and ventilation,

4.6 PPE, work organization and management, control strategies, Thermal stress.

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS:

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Yamamoto, D. P. (2022). *Industrial Hygiene: A Foundational Role in Total Exposure Health. In Total Exposure Health*. CRC Press.

2. Scott, Ronald M (2018). *Basic concepts of industrial hygiene.* Routledge.

3. Johnson, Thomas, (2017). *Introduction to Health Physics*. Mcgraw Hill Publisher.

4. Nagy, John, (2017) *Development and control of dust explosions.* Routledge.
5. Boss, Martha J., and Dennis W. Day, eds. (2016). *Biological risk engineering handbook: infection control and decontamination.* CRC Press.

OHS-516: PRINCIPALS OF INDUSTRIAL HYGIENE (LAB) (ELECTIVE)

(01 Credit Hrs)

PRE-REQUISITE: B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD

COURSE LEARNING OUTCOMES

At the end of this course, students should be able to accomplish:

1. Identify literature sources of standard methods for measurement of occupational exposures to chemical contaminants;
2. Identify the advantages and the limitations inherent in a variety of techniques and instruments used for industrial hygiene measurements, and what specific factors in the sampling situation might prevent accurate application of that approach;
3. Understand the framework for selection of appropriate methods for measurements of specific workplace contaminants;
4. Demonstrate knowledge of the operating principles of contemporary field meters for chemical agents; Demonstrate proficiency in the use of these devices;
5. Demonstrate knowledge of the operating principles, advantages, and limitations of several kinds of major laboratory instruments commonly used for chemical analysis.
6. Apply basic concepts in quality control and quality assurance for chemical measurement data;
7. Critically evaluate the reliability of chemical measurement data;
8. Express and interpret the chemical measurement results in terms that are applicable to occupational standards and situations;
9. Demonstrate competency in technical reports writing;

Contents

This course will familiarize students with accepted industrial hygiene procedures for assessing chemical, biological and physical hazards in the workplace and ambient environment; evaluation of ventilation systems using various air flow measuring devices will enable students to evaluate the effectiveness of engineering controls for airborne hazards; calibration and maintenance of instruments; noise measurements and interpretation of data; application of direct reading instruments; and collection and analysis of samples for mold and other biological hazards. Students prepare laboratory reports.

Unit-I

1.1 Calibration of airflow measuring devices Aerosol sampling using filter samplers, cyclones, and cascade impacts. Aerosol analysis using gravimetric and real-time methods.

1.2 Atomic absorption spectroscopies for analysis of metals in airborne particles and surface samplesExposure Evaluation,

1.3 Air Sampling; Air-Sampling Instruments;

Unit-II

2.1 Direct measurement techniques for gases and vapors: Detector tubes and direct reading instruments.

2.2 Local Exhaust Ventilation of Industrial Occupancies; General Ventilation of Industrial Occupancies.

2.3 Asbestos is identified in bulk materials by polarized light microscopy and is analyzed in air samples by NIOSH Method 7400 using phase contrast microscopy. Introduction to automated image analysis.

Unit III

3.1 Infra-red spectroscopy: nondispersive carbon dioxide monitors and the dispersive MIRAN instrument for the measurement of single compounds and the evaluation of mixtures in air.

Unit IV

4.1 Adsorption sampling for organic gases using charcoal tube and badge samplers and analysis by gas chromatography.

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS:

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Yamamoto, D. P. (2022). *Industrial Hygiene: A Foundational Role in Total Exposure Health. In Total Exposure Health.* CRC Press.
2. Scott, Ronald M (2018). *Basic concepts of industrial hygiene*. Routledge.
3. Johnson, Thomas, (2017). *Introduction to Health Physics.* Mcgraw Hill Publisher.
4. Nagy, John, (2017) *Development and control of dust explosions.* Routledge.
5. Boss, Martha J., and Dennis W. Day, eds. (2016). *Biological risk engineering handbook: infection control and decontamination.* CRC Press.

OHS - 517 FUNDAMENTALS OF ERGONOMICS AND NOISE CONTROL (03 Credit Hrs)

PRE-REQUISITE: B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD

Course Learning Outcomes

At the end of this course, the student will be able to:

1. Identify and be familiar with the physical, individual and organizational factors which can contribute to musculoskeletal disorders.
2. Identify and be familiar with common musculoskeletal disorders which can result from occupational activities.
3. Identify and be familiar with the structure and anatomy of the upper extremities and low back.
4. Use various assessment tools to identify and evaluate various upper extremity hazards in the workplace.
5. Use various assessment tools to identify and evaluate lifting and manual material handling activities:
6. Identify ergonomic hazards and implement solutions in office and manufacturing environments.
7. Use various economic techniques to identify, propose and justify implementing ergonomic solutions in the workplace.
8. Be able to set-up, establish and maintain a workplace ergonomics program, identify the occupational noise hazards and why noise pollution should be controlled. The students are expected to be familiar with the principal methods for the control of these pollutants in terms of theory and practice.

Contents

Theory

Unit-I Introduction to Ergonomics

1.1 Anthropometry Overview,

1.2 Research Application of Anthropometry,

1.3 Anatomy of the back,

1.4 Introduction to Statics,

Unit-II Ergonomic issues and control

2.1 Material Handling/Back Protection, ergonomics and productivity, ergonomic standards,

2.2 lean manufacturing and ergonomics, ergonomics and the fishing industry,

2.3 hand tool design, construction ergonomics, office ergonomics, manufacturing ergonomics,

2.4 manual material handling, patient handling, whole body vibration, hand-arm vibration,

2.5 agricultural ergonomics, Upper extremity anatomy, Upper Extremity, Musculoskeletal Disorders,

2.6 Objective and Subjective Measurements Methods,

2.7 Obesity in the Workplace, Manufacturing Ergonomics and Hand Tool Use and Design,

2.8 Justifying costs of ergonomic solutions.

Unit-III Introduction to Noise

3.1 Occupational noise and noise pollution, Noise Measurement and its Assessment,

3.2 Causes of Occupational Noise, Effects of Occupational Noise,

3.3 Exposures to Workers in Different Areas,

3.4 Limits for Occupational Noise Exposure,

3.5 Health Effects of Occupational Noise Exposure,

Unit-IV Control Measures

4.1 Control of Noise at Source,

4.2 Control of Noise Exposure with Hearing Protectors,

4.3 Monitoring the Health Effects of Noise (Audiometry), and Notification of Serious Harm,

4.4 Training and Education

4.5 Duties of Employees and the Self-Employed Regarding Occupational Noise,

4.6 Duties of Designers, Manufacturers and Suppliers of Plant and Hearing Protectors

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS:

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Burke, Michael, (2020). *Applied ergonomics handbook*. CRC Press.
2. Le Prell, Colleen G. (2020). *"Effect of noise exposure on human auditory function: Hidden versus not-so-hidden hearing loss." In Advances in Audiology and Hearing Science*. Apple Academic Press.
3. Bies, David A., Colin Hansen, and Carl Howard, (2017). *Engineering noise control*. CRC press.
4. Konz, Stephan (2017). *Work design: occupational ergonomics*. CRC Press.
5. Nieuwenhuijsen, M. J, (2015). *Exposure Assessment in Environmental Epidemiology*. Oxford University Press, USA.

OHS-518: OCCUPATIONAL HEALTH AND SAFETY STANDARDS (ELECTIVE) (02 Credit Hrs)

PRE-REQUISITE: B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD

Course Learning Outcomes

Upon successful completion of this course, the students will be able to:

1. Understand the principles of OH&S management systems.
2. Understand benefits of implementing OH&S management systems.
3. Explain and define the purpose, intent, and requirement of each element of the OHSAS 18001:2007.
4. Develop a documented OH & S management system framework.
5. Conduct risk assessments and OH&S management system audits in any organization in accordance to requirements of OHSAS 18001: 2007.
6. Implement & maintain OHSAS 18001:2007 in any organization.

Contents

This course explains the regulatory requirements for an occupational health and safety issues to enable a person to improve the Occupational Health & Safety (OH&S) performance risks at any organization regardless of its activity or sector by identification and control of hazards. It will help students to know the applicable procedures under the rules and help them to develop, implement, maintain, and continually improve an occupational health and safety procedures within an organization to meet the requirements of the law and social responsibility.

Theory

Unit-I Introduction

1.1 Introduction to basic concepts and terminologies associated with occupational health and safety,

1.2 Overview of Factory Act 1934, Overview of OSHA, Introduction of Pakistan Labour Laws

1.3 Brief overview of BS (British standards), History and introduction to bs OHSAS 18001:2015 and iso 45001, PDCA cycle (deming's cycle)

1.4 The economic impacts of implementing the standard,

Unit-II Detailed Guidelines and regulations

2.1 Review and interpretation of BS OHSAS 18001: 2015 and ISO 45001 general requirements;

2.2 Occupational health & safety policy, Planning (hazard identification, Risk assessment and controls, Legal and other requirements, Objectives and programs),

2.3 Implementation and operation (resources, roles, responsibility, Accountability and authority;

2.4 Competence training and awareness; Communication, participation and consultation;

2.5 Documentation; control of documents; Operational controls, & emergency preparedness and response),

2.6 Checking (performance measurement and monitoring, evaluation of compliance, incident investigation, non-conformity, corrective and preventive actions; control of records, and internal audit), Management review

Unit-III Economic Role

3.1 The economic impacts of implementing the standard

3.2 Role of national and international bodies

Unit-IV Certification process

4.1 Correspondence between to OHSAS 18001:2007, and other regulatory standards,

4.2 The ISO 45001 and OHSAS 18001: 2015 certification process and auditing.

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS:

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RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Manuele, F. A. (2020). *Advanced Safety Management: Focusing on Z10. 0, 45001, and Serious Injury Prevention*. John Wiley & Sons.

2. Servais, Jean-Michel. (2020*). International labour law*. Kluwer Law International BV.

3. Friend, Mark A., and James P. Kohn. (2018). *Fundamentals of occupational safety and health*. Rowman & Littlefield.

4. Brauer, Roger L. (2016). *Safety and health for engineers*. John Wiley & Sons.

5. Naeem Sadiq, (2012). *OHSAS 18001 Step by Step: A Practical Guide*. IT Governance Publishing.

OHS-519 INDUSTRIAL WASTE MANAGEMENT PRACTICES
(ELECTIVE) (02 Credit Hrs)

PRE-REQUISITE: B.S/M.Sc/BE (Natural/Life/Physical/Earth Sciences), MBBS, PGD

Course Learning Outcomes

Upon successful completion of this course, the student will have ability to:

1. Describe hazardous waste management issues;
2. Learn approaches to minimize hazardous waste production and safe methods to transport it to disposal facilities;
3. Understand national and international waste management regulations and guidelines;
4. Prepare waste management programs and train facilities employees and manage it properly in compliance with all applicable regulatory requirements.

Contents

The course delineates study of the complexities associated with waste generation, environmental effects and management, relevant regulations; integrated waste management strategies; disposal and diversion methods and site selection and operational health risks.

Theory

Unit-I Introduction to Hazardous wastes

1.1 hazardous waste sources, characteristics and classification

1.2 hazardous waste management priorities

1.3 hierarchy of potential implementation strategies

1.4 US-EPA hazardous waste lists

Unit-II Industrial waste management

2.1 industrial waste generation and management

2.2 characteristics of solid waste streams from industries

2.3 management of an industrial site classified as a very small quantity generator

2.4 management of environmental hazards at industrial sites

Unit-III Waste management and treatment strategies

3.1 current waste reduction, reuse, and recycling strategies

3.2 treatment and disposal of solid wastes from industry

3.3 health and safety issues in handling, transportation and waste disposal

Unit-IV Hazardous Waste Practices

4.1 best practices of hazardous waste management in world (developed/developing)

4.2 hazardous waste management regulations in Pakistan

4.3 hazardous waste generator status and regulatory requirements

- waste audits (strategies, administrative processes)

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

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RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Saxena, G., Kishor, R., & Bharagava, R. N. (2020). *Bioremediation of industrial waste for environmental safety*. Springer Singapore.

2. Celenza, G. J. (2019). *Industrial waste treatment process engineering: biological processes*. CRC Press.

3. Blackman Jr, W. C. (2016). *Basic Hazardous Waste Management*. CRC Press.
4. LaGrega, M. D., Buckingham, P. L., & Evans, J. C. (2010). *Hazardous waste management*. Waveland Press.

5. Wang, L. K., Hung, Y. T., Lo, H. H., & Yapijakis, C. (Eds.). (2004). *Handbook of industrial and hazardous wastes treatment*. CRC Press.

SECOND SEMESTER

OHS-520 RESEARCH METHODS IN OCCUPATIONAL HEALTH & SAFETY (03 Credit Hrs)

PRE-REQUISITE: As per completion of 1st semester courses

Course Learning Outcomes

The course will enable students to observe various phenomena keenly and evaluate them critically. Also, learn to design a research project, collect data, and write a report/paper.

Contents

This course is aimed at preparing students to comprehend and analyze varying situations, within a systematic, logical, and scientific framework when doing research.

Theory

Unit-I Introduction: Meaning of research, Importance, and application of research in various fields and in Health and Safety, Types of research and Reporting, Descriptive, Explanatory, Predictive, and Empirical, Casual, Historical, Desired data of good research, Qualities of a good researcher.

Unit-II Scientific Research: Sources of knowledge (Non-Empirical and Empirical), Definition and characteristics of science, Working assumptions and goals of science, Development and role of Theories, Essential Criteria of Scientific Methods.

Unit-III Sampling and Sources of Data: Using Secondary Data: Search, Types, Uses, Evaluation, Advantages/Disadvantages, Population and sampling, Probability sampling, Non-probability sampling.

Unit-IV Collection of Primary Data: Tools of data collection, observation, unstructured, semi structured, and structured techniques, Questionnaire, Interview schedule and guidelines.

Unit-V Research Design: Research process, Elements of research design, Formulation of research problems, Survey and critical review of literature, Choice of research, approach, and strategy.

Data Organization and Analysis: Description and organization of data, Analysis of Quantitative data, Analyzing Qualitative Data.

Unit-VI Report Writing: Format, organizing content, developing style, Referencing, Final report.

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

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RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.

2. Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative research methods*. Sage.

3. Walliman, Nicholas. (2017). *Research methods*: *The basics*. Routledge.

4. Taylor, Steven J., Robert Bogdan, and Marjorie DeVault. (2015). *Introduction to qualitative research methods: A guidebook and resource.* John Wiley & Sons.

OHS-521 OCCUPATIONAL HEALTH & SAFETY AUDITING AND PROJECT MANAGEMENT (02 Credit Hrs)

PRE-REQUISITE: Occupational Health, Safety, Industrial Hygiene, Noise Control

Course Learning Outcomes

After successful completion of this course, students will be able to:

1. Know the various standards and types of auditing and environmental audits.
2. Know how to conduct an audit according to ISO 45001 as well as to local management systems.
3. Understand the project definition and project management tools.
4. Understand the identification of stakeholders, the role of sponsors and the role of project manager.
5. Know how to apply project life cycle to a project.

Contents

Theory

Unit-I Fundamentals of Auditing

1.1 Introduction to ISO 19011 for auditing,

1.2 Principals of Environmental Auditing,

1.3 Local and international environmental auditing systems,

Unit-II Introduction to Occupational health and safety Auditing

2.1 History of Occupational health and safety Auditing

2.2 Types of Occupational health and safety audits,

2.3 Audit preparation and planning,

2.4 Methods of Gathering Audit Evidence,

2.5 Practical Audit Exercise,

2.6 Audit communication and reporting system.

Unit-IV Introduction to Project Management

3.1 Project Philosophy,

3.2 Project methodologies,

3.3 Project perspectives

3.4 Stakeholders Analysis and Participation

3.5 Project goal and scope management,

3.6 Project life cycle

Unit-IV Project Life Cycle

4.1 Project initiation

4.2 Project planning,

4.3 Project execution and control, Project closure management

4.4 Communication and conflict management, Reasons for project success or failure

4.5 Planning commission proformas

4.6 Project planning and approval processes Resource mobilization

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

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RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Lee, Thomas Alexander, ed. (2020). *The evolution of audit thought and practice. Vol. 18*. Routledge.
2. Scott Gunderson CSP, A. R. M. (2020*). "Safety, Health & Environmental Auditing: A Practical Guide."* Professional Safety 65, no. 5.
3. Kjellen, Urban, and Eirik Albrechtsen. (2017). *Prevention of Accidents and Unwanted Occurrences: Theory, Methods, and Tools in Safety Management*. CRC Press.
4. Turner, Rodney. (2016). *Gower handbook of project management.* Routledge Publishers.

OHS-522 FIRE SAFETY & EMERGENCY PREPAREDNESS (03 Credit Hrs)

PRE-REQUISITE: Occupational Health, Safety, Industrial Hygiene, Noise Control

Course Learning Outcomes

This subject will give the students understanding;

1. About preventive measures that will eliminate or minimize causes of fire or fire hazards in the workplace,
2. And proper emergency and evacuation procedures in the event of a fire.
3. The effective emergency preparation can reduce injuries, prevent or minimize environmental impacts, protect employees and neighbors, reduce asset losses, and minimize downtime.

Contents

Unit-I Fire Safety

1.1 History of fire incidents,

1.2 Introduction to fire and fire triangle,

1.3 Possible causes of fire,

1.4 Prevent to possible causes of fire,

1.5 Importance of fire safety at work, classes of fire,

Unit-II Role of National and International Governments

2.1 Local standards and legislation

2.2 NFPA Standards

2.3 OSHA Standards

Unit-III Fire Prevention

3.1 Types of fire extinguishers,

3.2 Selection of fire extinguisher,

3.3 RACE (Rescue, Alarm, Contain and Extinguish)

3.4 PASS (Pull, Aim, Squeeze and Sweep) acronyms, emergency response plan and its components; fire detectors, alert system, assembly point, evacuation plan, accounting emergency warden, and training and participation in fire drills.

Unit 4 Emergency Preparedness and Response

4.1 To overview potential emergency situations (such as fires, explosions, spills or releases of hazardous materials, and natural disasters),

4.2 key organizational responsibilities in emergency conditions, arrangements with local emergency support,

4.3 emergency response procedures,

4.4 emergency evacuation plan, emergency evacuation map (evacuation routes, exits and assembly points,

4.5 locations and types of emergency response equipment, training / testing of personnel, including the on-site emergency response team.

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

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RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Das, A. K. (2020). *Principles of Fire Safety Engineering: Understanding Fire and Fire Protection*. PHI Learning Pvt. Ltd..
2. Buchanan, Andrew H., and Anthony Kwabena Abu. (2017). *Structural design for fire safety*. John Wiley & Sons.
3. N. Sesha Prakash, 2017. *Manual of Fire Safety*. CBS Publishers & Distributors.
4. Hurley, Morgan J.,(2015). *SFPE handbook of fire protection engineering*. Springer.

OHS-523: OCCUPATIONAL HEALTH AND SAFETY ISSUES IN OIL & GAS INDUSTRY (02 Credit Hrs)

PRE-REQUISITE: As per completion of 1st semester courses

Course Learning Outcomes

Students will understand;

1. The occurrence and distribution of petroleum reserves; know various processes used for oil and gas exploration, drilling, and extraction;
2. To know types of injuries at oil & gas sites and how to avoid and minimize them and how to prepare for emergencies at such locations,
3. Knowledgeable about potential fire issues and using preventive techniques;
4. How to use various techniques to train workers and mitigate hazards; how to develop safe work practices and reduce injuries and illnesses.

Contents

To familiarize students about fossil fuels presence, exploration, and drilling to provide the foundation of this industry and then discuss Occupational, Health Safety, and Environment issues in various processes. on the petroleum industry. Also, inform students about issues in the construction industry and various methods to control them.

Theory

Unit-I Oil and Gas Industry

1.1 Introduction to O&G drilling processes

1.2 Fundamentals of upstream, midstream, and downstream petroleum activities.

1.3 World distribution of petroleum

1.4 Safety hazards associated with oil and gas extraction activities

Unit-II Rig Site and Safety

2.1 Production of Shale gas and tight sand

2.2 Rig installation and its safety

2.3 Pressure militance

Unit-III First aid at Oil & Gas sites

3.1 Environmental Set up at Rig site

3.2 Env. Issues at the rig site

3.3 Oil extraction and soil contamination

3.4 Disease at the site and first aid

3.5 Hydrocarbon and cancer risk

Unit- 4 Health and safety issues and Policy related to oil refineries.

4.1 Safety issues in transportation

4.2 Oil waste management and disposal

4.3 OSHA methods for handling oily wastes

4.4 Policy regarding oil and gas industry

4.5 Occupational Health and Safety and Environment issues related to various aspects of the O&G industry and appropriate control measures.

TEACHING-LEARNING STRATEGIES

- Lecture-based examination
- Presentation/seminars
- Class discussion
- Quizzes

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RECOMMENDED TEXTBOOKS / SUGGESTED READINGS

1. Unnikrishnan, G. (2020). *Oil and Gas Processing Equipment: Risk Assessment with Bayesian Networks.* CRC Press.
2. Shankaren, M., Varadharajan, S., Singh, A. K., & Nandan, A. (2020). *Inherent Safety in Offshore Oil and Gas Activities. In Advances in Air Pollution Profiling and Control.* Springer, Singapore.
3. Paterson, John. (2017). *Behind the Mask: Regulating health and safety in Britain's offshore oil and gas industry*. Routledge.
4. Maguire, Richard. (2017). *Safety cases and safety reports: meaning, motivation, and management*. CRC Press.
5. Brauer, Roger L. (2016). *Safety and health for engineers*. John Wiley & Sons.
6. WGT. (2015*). Introduction to Oil and Gas Operational Safety, Revision Guide for the NEBOSH International Technical Certificate in Oil and Gas Operational Safety*. 1st edit, Wise Global Training (WGT), Taylor & Francis.

OHS-524 OCCUPATIONAL HEALTH AND SAFETY IN CONSTRUCTION INDUSTRY (02 Credit Hrs)

PRE-REQUISITE: As per completion of 1st semester courses

Course Learning Outcomes

1. Students will understand various types of construction sites and mining industry;
2. Know types of injuries at sites and how to avoid and minimize them;
3. What are the potential occupational health and safety issues in this industry?
4. How to prepare for emergencies at such locations as well as about potential fire issues and using preventive techniques
5. How to use various techniques to train workers and mitigate hazards

Contents

The course is designed to familiarize students about major health and safety issues in construction industry. Furthermore, the course will give a theoretical and practical guideline for possible control measures to mitigate all issues.

Theory

Unit-I Introduction

- 1.1 Introduction to various construction sites,
- 1.2 Introduction to mining sites of Pakistan

Unit-II Health and safety issues

2.1 Types of injuries associated in this risk prone industry; Working At Height, Moving Objects, Slips, Trips, & Falls, Noise, Hand Arm Vibration Syndrome, Material & Manual Handling, Collapse, Asbestos, airborne particulates, and electricity.

2.2 Explosion safety and its legislative requirements

2.3 Rig installation and its safety

2.4 Introduction of dam construction and its safety

2.5 Safety issues of demolition workers

Unit-III Risk Assessment

3.1 Elements of risk assessment

3.2 Case Studies

Unit-IV Management and control

4.1 Scaffold safety management

4.2 Tunnel safety management

4.3 Road safety management

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

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RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Belman, D., Druker, J., & White, G. (Eds.). (2021). *Work and Labor Relations in the Construction Industry: An International Perspective*. Routledge.
2. Sagan, S. D. (2020). *The limits of safety*. Princeton University Press.
3. Gould, K. P., & Bieder, C. (2020). Safety and Security: The Challenges of Bringing Them Together. In *The Coupling of Safety and Security*. Springer.
4. Ashworth, A., & Perera, S. (2018). *Contractual procedures in the construction industry*. Routledge.
5. Maguire, Richard. (2017). *Safety cases and safety reports: meaning, motivation and management*. CRC Press.

OHS 525 BIOSAFETY AND BIOSECURITY (02 Credit Hrs)

PRE-REQUISITE: Occupational Health, Safety, Industrial Hygiene, Noise Control

Course Learning Outcomes

Upon completion of this course, students will be able to:

1. Have a grasp on the concept of biosafety and biosecurity, biohazards, their nature and fate in the environment
2. Have a concept of biosafety levels, risk groups and the containment levels
3. Able to conduct biosafety risk assessment and management for a given workplace
4. Have knowledge of biosafety protocols, containment measures and emergency response procedures
5. Understand the guidelines and decontamination operations for accidental spills and management of biohazardous waste

Contents

This course is designed to provide an overview of biosafety, biosecurity and bio contaminants, biosafety risk assessment, levels of biosafety, components of biosecurity, decontamination and guidelines for the handling of regulated material in different workplaces

Theory

Unit 1 Introduction to Biosafety

1.1 Concept of biosafety and Biosecurity
1.2 History of biosafety
1.3 Biological threats and challenges

Unit 2 Biocontaminants and Biosafety levels

2.1 Types of biocontaminants
2.2 Virulence and transmission of biohazardous material
2.3 Biosafety Levels
2.4 Containment of biohazards

Unit 3 Biosafety Risk Assessment

3.1 The 6 P's of Risk Assessment
3.2 Biosafety Risk Management
3.3 Risk communication

Unit 4 Components of Biosafety and Biosecurity Program

4.1 Biosafety equipment (Safety Cabinets etc.)
4.2 Personal protective equipment
4.3 Biosecurity, emergency and incident response to biohazard spills and releases,

Unit 5 Disinfection and Decontamination

5.1 Biological waste spill cleanup
5.2 Waste disposal
5.3 Disinfection/selection of disinfection
5.4 Sterilization

Unit 6 Guidelines and Regulations

6.1 Shipping and transportation of regulated biological materials,
6.2 OSHA bloodborne pathogen standards
6.3 NIH recombinant DNA guidelines

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

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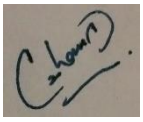
RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Wooley, Dawn P., and Karen B. Byers, eds. (2020). *Biological safety: principles and practices.* John Wiley & Sons.
2. Bayot, M. L., & Limaiem, F. (2020). *"Biosafety guidelines*.". StatPearls Publishing.
3. Andrew, W. (2017). *Public health in practice*. Macmillan International Higher Education.
4. Ives, Jane H. (2017). *The export of hazard: Transnational corporations and environmental control issues*. Routledge.
5. Fleming, D. O., & Hunt, D. L. (2014). *Biological Safety: Principles and Practices*. ASM Press.

Checklist for a New Academic Program

Parameters	
1. Department Mission and Introduction	☐
2. Program Introduction	☐
3. Program Alignment with University Mission	☐
4. Program Objectives	☐
5. Market Need/ Rationale	☐
6. Admission Eligibility Criteria	☐
7. Duration of the Program	☐
8. Assessment Criteria	☐
9. Courses Categorization as per HEC Recommendation	☐
10. Curriculum Difference	☐
11. Study Scheme / Semester-wise Workload	☐
12. Award of Degree	☐
13. Faculty Strength	☐
14. NOC from Professional Councils (if applicable)	☐



Program Coordinator **Principal**