American University of Beirut

Faculty of Health Sciences

**EPHD 403**

**Advanced Epidemiological Methods: Case Control and Cohort Studies [3 credits]**

Course Syllabus

Fall Semester, Academic Year 2023-24

**Class time and Venue:**

Date: Wednesdays (exception to a few sessions)

Times: 3:30 to 6:00 pm

Venue: Room 224

**Course Instructors and Contact Details:**

|  |  |
| --- | --- |
| Monique Chaaya, DrPH, MPH  Van Dyck 205 [mchaaya@aub.edu.lb](mailto:mchaaya@aub.edu.lb) Upon Request | Abla Mehio Sibai  Van Dyck 206 [am00@aub.edu.lb](mailto:am00@aub.edu.lb) Upon request |

**Course Description:**

The objective of the course is to enhance a student’s ability to design and conduct unbiased and efficient epidemiologic research. It is specifically designed to expand student’s understanding of the methods of sampling for cases and controls and ways to prevent and address biases in case control studies. It also examines in details key design features of cohort studies, including assembling the cohort, strategies for recruitment and retention. Nested case control and case cohort studies are also discussed. The course relies heavily on articles’ discussion and students’ participation.

**Course learning Objectives**

**By the end of the course, students will be able to:**

LO1. Evaluate the sources of data for cases in a case control study

LO2. Critically evaluate types of control appropriate for your cases

LO3. Design an unbiased case control study

LO4. Set up a cohort and address challenges in follow up in the context of lack of data and instability

LO5. Discuss design issues of hybrid studies specifically nested case control and case cohort

LO6. Critically evaluate published epidemiological studies

**Essential Skills**

* **Essential Skill 1:Critical thinking/analysis**
* **Essential Skill 2: Problem solving**
* **Essential Skill 3: Presentation skills**

[**Link to PHEO Portal**](https://sites.aub.edu.lb/fhspheostudent/)

**Course Learning Objectives mapped to CEPH competencies**

* PC2: Produce rigorous syntheses of published literature using systematic methodologies, and evaluate the quality of synthesized evidence
* PC6: Design and lead independent research on theoretical and/or applied epidemiologic problems
* PC 11: Interpret and evaluate original or published results

Table 1: Mapping EPHD 403 course learning objectives to PhD in Epidemiology Program Competencies

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 |
| PC2: Produce rigorous syntheses of published literature using systematic methodologies, and evaluate the quality of  synthesized evidence |  | **X** | **X** |  |  | **X** |
| PC6: Design and lead independent research on theoretical and/or applied epidemiologic  problems |  |  | **X** | **X** |  |  |
| PC 11: Interpret and evaluate original or  published results | **X** | **X** | **X** |  | **X** | **X** |

**Assigned Text Book and Readings**

Detailed list of assigned readings can be found in Table -3

Additional readings/resources will be made available on Moodle.

**Course requirements and Student evaluation:**

**Pre-requisites:**

Design and analysis of epidemiologic studies (EPHD 320) or its equivalent.

**Attendance:**

Attendance will be taken at all lectures. Students are required to read the assigned readings

prior to the class sessions, participate in class discussions and assignments.

**Student Evaluation:**

**Table-2 Summary of students' assessments mapped to course learning objectives**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Learning Objectives** | | | | | |
| LO1 | LO2 | LO3 | LO4 | LO5 | LO6 |
| Participation (10%) | **X** | **X** |  | **x** | **X** | **X** |
| **PART I: CASE CONTROL STUDIES\_ SIBAI** | | | | | | |
| Assignment 1: Present and discuss one of the case-  control papers (7.5%) | **X** | **X** |  |  |  |  |
| Assign 2: Critiquing 2 Endometriosis Case Control  studies(7.5%) | **X** | **X** |  |  |  |  |
| Presentation (group presentation on non- differential misclassification/collider  bias)(15%) | **X** |  | **X** |  |  |  |
| Critique of a paper (15%) | **X** | **X** | **X** |  |  | **x** |
| **Part II: COHORT STUDIES\_CHAAYA** | | | | | | |
| Assign 1: Read and  present on a “Cohort (10%) |  |  |  | **X** |  |  |
| Critique of two papers (10%)  Each 5 % |  |  |  |  | **X** | **X** |
| Final Assignment: Design a cohort study to respond to a specific research question set by the course instructor (30%) |  |  |  | **X** |  |  |

**Policies and other General Notes:**

**Academic integrity:**

Education is demanding and you need to properly manage your time. Do not hesitate to use the resources around you but do not cut corners. Cheating and plagiarism will not be tolerated. Review the Student Code of Conduct and familiarize yourself with definitions and penalties. Cheating might earn you a failing mark on the assignment, at the very least. You might fail the course in which you cheated, be warned, suspended or expelled from University and a permanent mention of the disciplinary action might be made in your student records. If you’re in doubt about what constitutes plagiarism, ask your instructor because it is *your* responsibility to know. Remember that the American University of Beirut has a strict anti-cheating and anti-plagiarism policy. Do not become a lesson to others.For further information, kindly visit AUB’s Policies and Procedures or

<http://pnp.aub.edu.lb/general/conductcode.>

Since there is no guiding statement on use of AI tools, such as ChatGpt, from AUB, it is important for you to know the stance of the course instructors.

You can use AI tools to generate content (text, video, audio, images) to support you in preparing an assignment but cannot ask AI to do your assignment. If you use AI you need to be transparent about it. Please note that AI tools may generate inaccurate information and citations. Students will be held accountable for any false products they submit. For more detailed examples on AI policies, kindly refer to the [document](https://acrobat.adobe.com/id/urn:aaid:sc:AP:8bfc584d-69f9-40b8-9889-8ae7c2def639) previously circulated as part of the new syllabi template.

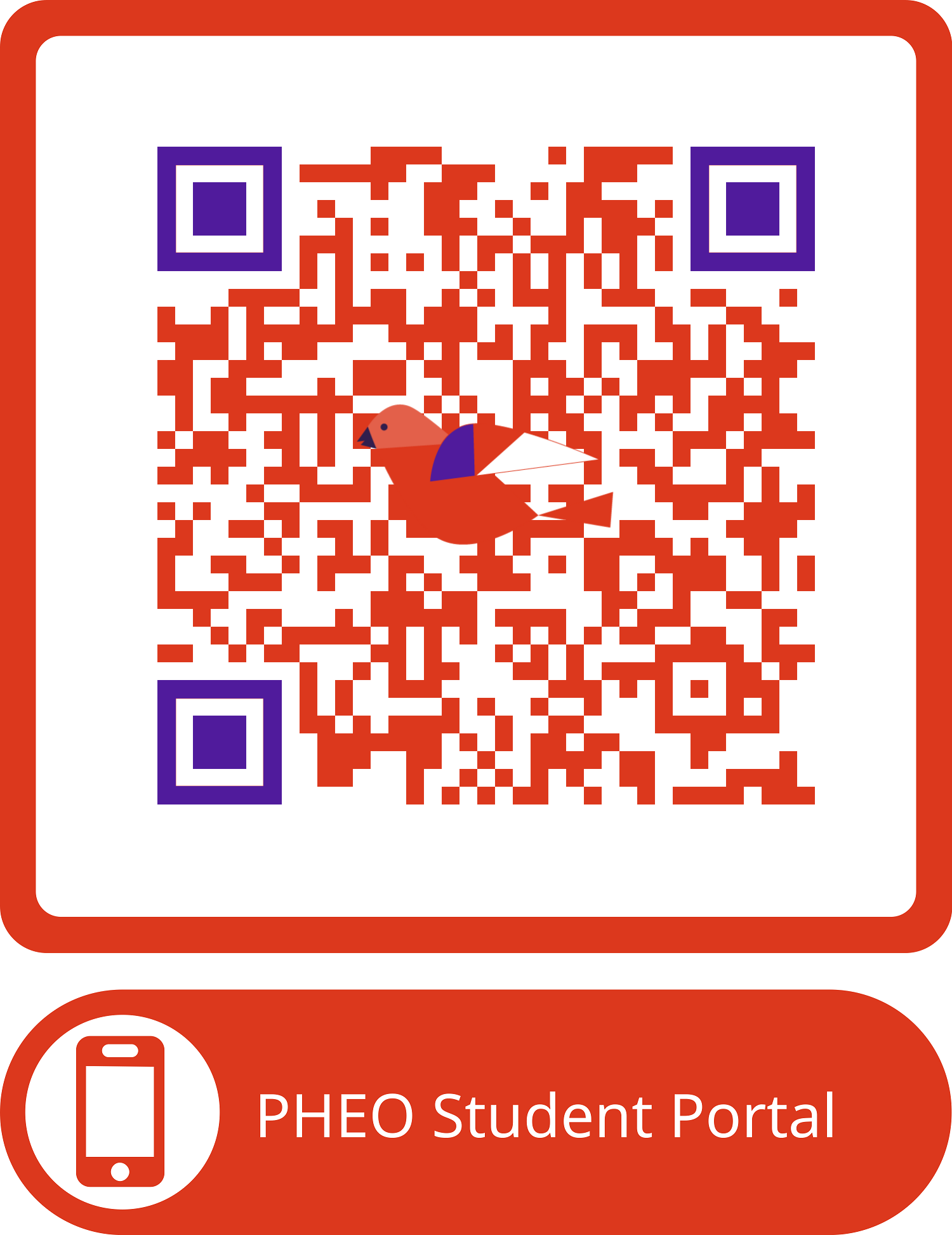
**Students with Disabilities:**

If you have a disability, for which you may request accommodation in AUB classes, consult the website for more information and make arrangements with the Coordinator (http://www.aub.edu.lb/sao/Pages/Students\_20with\_20Special\_20Needs.aspx). Also, please see the instructor of this course privately in regard to possible support services that can be provided to you.

**Non-Discrimination- Title IX- AUB**

AUB is committed to facilitating a campus free of all forms of discrimination including sex/gender-based harassment prohibited by Title IX. The University’s non-discrimination policy applies to, and protects, all students, faculty, and staff. If you think you have experienced discrimination or harassment, including sexual misconduct, we encourage you to tell someone promptly. If you speak to a faculty or staff member about an issue such as harassment, sexual violence, or discrimination, the information will be kept as private as possible, however, faculty and designated staff are required to bring it to the attention of the University’s Title IX Coordinator. Faculty can refer you to fully confidential resources, and you can find information and contacts at [www.aub.edu.lb/titleix](https://www.aub.edu.lb/titleix). To report an incident, contact the University's DEI (Diversity, Equity and Inclusion) and Title IX Coordinator Mitra Tauk at 01-350000 ext. 2514, or [titleix@aub.edu.lb](mailto:titleix@aub.edu.lb). An anonymous report may be submitted online via EthicsPoint at [www.aub.ethicspoint.com](https://www.aub.ethicspoint.com/).

**Accessible Education Office (AEO):**

The Accessible Education Office (AEO) coordinates academic accommodations and services for all eligible AUB students with disabilities (such as ADHD, learning difficulties, mental health conditions, chronic or temporary medical conditions, and others). If you have a disability for which you wish to request accommodations at the department, faculty or university level, please contact AEO as soon as possible. Once you register with our office, we will assist you in receiving appropriate accommodations and will liaise with your instructors and any related entity to best support your needs. AEO is located in West Hall room 314, and can be reached by phone at 1-350000 ext. 3246 or by email: [accessibility@aub.edu.lb](mailto:accessibility@aub.edu.lb). Information about our services can be found at: <https://www.aub.edu.lb/SAO/Pages/Accessible-Education.aspx>

**Writing:**

Written communication is essential for communication, health education and behavioral science. You are expected to proofread and spell-check any written documents before submission. Points will be deducted from the grades for low quality writings. You are encouraged to contact AUB’s Writing Center, located in Ada Dodge Hall, 2nd floor or West Hall, 3rd floor. Appointments can be booked online: <https://aub.mywconline.com/>, over the phone (Ext. 4077) or by walking in.

**Public Health Education Office**

Please refer to the Public Health Education Office Student Portal

**Detailed course outline:**

**Table -3 Schedule of Lectures, Practical Sessions, Readings and Assessments**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Week/**  **Session** | **Dates of Sessions** | **Topic** | **Readings** | **Assignment** | **Instructor** |
| 1 | Wed, Sept 6  3:30 – 6:00 pm | Introduction |  |  | Dr. Chaaya |
| **Case-control studies** | | | | | |
| 2 | Wed, Sept 13:  3:30 – 6:00 pm | Select a case-control study article from the American Journal of Epidemiology to discuss in class. Identify major issues in design |  |  | Dr. Sibai |
| 3 | Wed, Sept 20:  3:30 – 6:00 pm | Selection of cases (sources of data)  Selection of controls |  |  | Dr. Sibai |
| 4 | **Mon, Sept 25**:  2:00 – 4:00 pm | Critical analysis of a case- control study chosen by the course instructor  Biases: Selection(& Participation) And Information |  |  | Dr. Sibai |
| **Wednesday Sept 27, 2023 Holiday – Prohet’s Birthday (No classes)** | | | | | |
| 5 | Wed, Oct 4:  3:30 – 6:00 pm | Propensity Scores (with Dr. Martine El Bejjani) |  |  | Dr. Bejjani |
| 6 | Wed, Oct 11:  3:30 – 6:00 pm | Vaccine efficacy &case control studies (with Dr. Ghina Mumtaz) |  |  | Dr. Mumtaz |
| 7 | Wed, Oct 18: 3:30 – 6:00 pm | Wrap-up session on Confounding and the discussion of the critique of the paper |  |  | Dr. Sibai |
| 8 | Wed, Oct 25: 3:30 – 6:00 pm | Presentation |  |  | Dr. Sibai |

**PART II \_COHORT STUDIES SCHEDULE**

|  |  |  |  |
| --- | --- | --- | --- |
| date | content | Deliverable and dates | assessment |
| Session 1: Wednesday, November 1, 3:30pm-6:00pm | - Key features of cohort studies: a Refresher  - Discussion of 3 retrospective cohorts | Review posted PPT.  Discussion in class about main aspects of cohort studies  -Think about a research question in your field where a retrospective cohort will be warranted | 2.5 % Participation |
| Wednesday, Nov 8, 2023 – No class |  |  |  |
| Session 2: Monday, November 13, 2:00-5:00 pm | - Assembling the cohort(short presentation)  - Presentation by students of cohort studies of interest to their research work | Each student will present for seven minutes about one cohort.  Special attention to how cohort was set up.  General discussion in class | 10 % |
| Session 3: Wednesday, November 15, 3:30pm-6:00pm | -Key issues in measuring exposure in cohort studies  - Key issues in measuring outcomes (discussion of verbal autopsy  articles posted on Moodle | Flipped classroom  Students to apply their knowledge in class.  Group activity | 2.5 % Involvement |
| **Wednesday, Nov 22, 2023 -No class** | **Holiday – Independence Day** |  |  |
| Session 4: Monday November, 27, 2:00pm-5:00pm | -Issues in follow up of a cohort study (tracking and retaining)  -Practical session  Critical appraisal of one article looking specifically at Selection Bias in cohort studies | Required reading  Mukhtar and Butt, 2017  Booker et al, 2011  Robinson et al, 2007  Howe et.al, 2016 | 5 % participation  (group work) |
| Session 5: Wednesday November 29, 3:30pm-6:00pm | Introduction to cohort sampling and application to failure time data. | Reading to be assigned  Che Henry Ngwa |  |
| Session 6: Wednesday, December 6, 3:30pm-5:00pm | Hybrid design  Nested case control and case cohort studies  Group work | Chaaya | 5% assessment of an article using hybrid design  (group work) |

Design of a cohort study 30%