

**University of Detroit Mercy School of Dentistry**  
Periodontology and Dental Hygiene  
Course Syllabus

**Scientific Literature**  
**DH 828**

**Course Information**

Web Address: <http://knowledge.udmercy.edu>

**Course Directors:**

Judi S. Luxmore, RDH, MS Office: 308 Dental Clinic Building Office Hours by appointment Phone: 313-494-6628 Email: <a href="mailto:luxmorjs@udmercy.edu">luxmorjs@udmercy.edu</a> or contact Angela Carlson, Administrative Assistant. 313-494-6625	Anthony Neely, DDS, MS, PhD Office: 363 Dental Clinic Building Office Hours by appointment Phone: 313-494-6664 Email: <a href="mailto:neelya@udmercy.edu">neelya@udmercy.edu</a> or contact Angela Carlson, Administrative Assistant
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**Summer Term, 2008**

DH1 Students (Class of 2010)  
2440 Classroom Building, Wednesday mornings, 8:00 – 9:50  
2440 Classroom Building, Friday mornings, 10:00 – 11:50

**Credit Hours:** 2.0  
**Prerequisites:** None

**Lecturers/Support Faculty**

To be announced

**Academic Policies:**

All policies in the School of Dentistry Academic Policies Handbook including but not limited to academic integrity, mandatory attendance, professional decorum & dress code, identification (ID) badges, preclinical and classroom decorum, use of cell phone and electronic devices, examination policies and exam/quiz absences apply.

**Accommodations:**

If you would like to request a classroom, testing, preclinical, clinical, or other accommodation because of a legally protected disability, or if you might require any special assistance in the event of an emergency or evacuation, please contact the University of Detroit Mercy's Office of

University Academic Services (UAC) at 313-578-0310 or email your request for information to [gallegem@udmercy.edu](mailto:gallegem@udmercy.edu)

## **Student Evaluation of Instruction**

Student feedback is valued by the faculty and the administration. All students are required to complete the School of Dentistry's on-line course evaluation by a specified date. Failure to comply by posted deadline dates will result in the receipt of an F (Failing) grade of record for the Evaluation Responsibility Course. Only constructive, professional recommendations will be reported and considered.

## **Course Description**

### **Purpose of the course:**

This course will prepare the dental hygiene student to critically read and assess scientific literature. Foundation knowledge in the Scientific Method and in Evidence Based Decision Making will be presented. Topics include: (a) components of professional articles and publications, (b) research methods, and (c) basic statistical concepts.

### **Course Goals:**

- The dental hygiene student will acquire knowledge of the principles of scientific methods.
- The dental hygiene student will acquire knowledge of the components of research studies.
- The dental hygiene student will apply knowledge and skills learned throughout this course to critically interpret scientific literature.

### **Specific Instructional Objectives:**

At the conclusion of lecture one, the dental hygiene student will be able to:

- Discuss why critically reading the healthcare literature is important to the dental hygiene clinician providing evidence-based patient care
- Define Evidence Based Decision Making, and list steps of the Scientific Method

At the conclusion of lecture two, the dental hygiene student will be able to:

- Classify and judge professional publications and articles based on content
- Define the role of the Institutional Review Board and discuss legal/ethical issues related to health care research

At the conclusion of lecture three, the dental hygiene student will be able to:

- List steps for research problem development
- Recognize independent and dependent variables within a statement, and define and construct a Null Hypothesis from a hypothesis.

At the conclusion of lecture four, the dental hygiene student will be able to:

- Differentiate between the types of research approaches, study designs and sampling methods

- Recognize the importance of controlling for bias
- List and apply the levels of evidence when ranking research studies

At the conclusion of lecture five, the dental hygiene student will be able to:

- Define and differentiate between various measurement instruments, validity and reliability, calibration, intra- and inter-rater reliability, and the four levels of measurement

At the conclusion of lecture six, the dental hygiene student will be able to:

- Discuss the purpose of and differentiate between frequency distributions/tables, bar graphs, and histograms.
- Explain and recognize the characteristics of a Normal or Skewed Distribution.

At the conclusion of lecture seven, the dental hygiene student will be able to:

- Define, differentiate, explain, and interpret the Levels of Central Tendency, Variance, and Standard Deviation.

At the conclusion of lecture eight, the dental hygiene student will be able to:

- Define and understand the concepts of association, causation and correlations.

At the conclusion of lecture nine, the dental hygiene student will be able to:

- Define and understand the concepts of confidence Intervals, p-values, error, and accepting or failing to accept the null hypothesis

At the conclusion of lecture ten, the dental hygiene student will be able to:

- Define and recognize the appropriateness of common statistical tests (parametric and non-parametric)

At the conclusion of lecture eleven, the dental hygiene student will be able to:

- Interpret p-values and levels of significance, and differentiate between statistical and clinical significance

At the conclusion of lecture twelve, the dental hygiene student will be able to:

- Recognize whether the conclusions drawn by the researchers are appropriate based on the research methods and results of the study

At the conclusion of this course, the dental hygiene student will be able to:

- Apply critical thinking skills to interpret current dental literature based on sound scientific information

### **Instructional Methods:**

Instructional methods used in this course will be lecture, small group discussions and activities, individual written and computer-based homework assignments, and organization/analysis of data presented in class.

## **School of Dentistry Dental Hygiene Competencies**

**Competency-based Education:** Assumes that learning to become an entry-level professional is a progression through stages from novice to competent.

**Stages of Progression to Competence:**

**F or Foundation Knowledge:** Basic knowledge, skills, and attitudes needed to begin the journey to competence.

**N or Novice Level:** Ability to articulate or describe the appropriate skills, knowledge, and professional attitudes. Novices need structure, clarity of goals, single and clearly explained approaches.

**B or Beginner Level:** Combines the appropriate skills, knowledge, and professional attitudes, all of which are performed with guidance and correction.

**C or Competent Level:** Combines the appropriate supporting skills, knowledge, and professional attitudes, all of which are performed reliably without assistance.

	<b>Competencies of the Graduating Dental Hygiene Student</b>	<b>Addressed</b>	<b>Evaluated</b>	<b>Method</b>
1.	The graduate demonstrates interpersonal communication skills to function successfully in a multicultural work environment with diverse populations.	NO	NO	NA NA NA
2.	The graduate makes professional decisions affecting the practice of dental hygiene that satisfy legal, societal and ethical principles.	NO	NO	NA NA NA
3.	The graduate performs routine evaluation of self and staff members and takes corrective action to address perceived deficiencies.	NO	NO	NA NA NA
4.	The graduate critically evaluates the validity of new information, new products, and/or techniques and their relevance to the practice of dental hygiene.	YES	B	Written Evaluation NA NA
5.	The graduate applies business and practice management skills.	NO	NO	NA NA NA
6.	The graduate promotes health maintenance and disease prevention.	NO	NO	NA NA NA
7.	The graduate applies the principles of infection control and environmental safety.	NO	NO	NA NA NA
8.	The graduate obtains, records, updates and organizes accurate and complete medical/dental histories including pertinent psychological and socioeconomic information.	NO	NO	NA NA NA
9.	The graduate performs, records and organizes a physical assessment appropriate for dental care.	NO	NO	NA NA NA

10.	The graduate determines differential, provisional or definitive dental hygiene diagnoses related to and congruent with the diagnosis of the dentist and other health professionals.	NO	NO	NA NA NA
11.	The graduate develops alternative dental hygiene care plans which are sequenced to address patients' needs, consistent with assessment and diagnoses.	NO	NO	NA NA NA
12.	The graduate establishes with the patient a mutually acceptable dental hygiene care plan.	NO	NO	NA NA NA
13.	The graduate monitors and provides for patient comfort associated with dental hygiene care.	NO	NO	NA NA NA
14.	The graduate delivers and/or manages planned dental hygiene treatment and education in sequence and in accordance with accepted standards of care.	NO	NO	NA NA NA

## **Course Policies**

- The course website will be used to communicate via e-mail. Announcements may be posted periodically, and the syllabus and schedule will be available on the site. Students are expected to check the website at least twice per week.
- All students are expected to attend class and be punctual. Student tardiness, absences, and unprofessional behavior will be monitored. Please disconnect cell phones and audible beepers during classroom activities. Restroom breaks may be quietly taken as necessary.
- **Students are expected to read all assigned materials PRIOR to class in order to be prepared for class or group discussion. Handouts and journal articles should be brought to class or readily available on your Tablets to facilitate group activities.**
- Reading assignments will vary from week to week and may include:
  - selected book chapters
  - journal articles
  - worksheets and handouts
  - popular literature
- **Course Evaluation Policy:**  
All students are required to complete the on-line course evaluation by the specified date. Failure to comply will result in the receipt of an incomplete "I" grade for the Evaluation Responsibility Course.
- **Decision Making/Professionalism**  
A student of the University of Detroit Mercy School of Dentistry is expected to abide by the moral and ethical standards set forth not only by the University and Dental Hygiene Program, but also the American Dental Hygienists' Association. These skills are critical to the practicing dental hygiene professional. Students are expected to abide by the professional decision making and responsibility guidelines stated in the UDM Academic Policies Handbook. Lack of such conduct shall be reported to the Associate Dean for Academic Administration and may be subjected to disciplinary action as stated.

## **Textbook and Resource Materials**

- The following text is **required:**  
**Mason J: Concepts in dental public health. Philadelphia (PA). Lippincott Williams & Wilkins, 2005. (<http://www.lww.com> )**
- Other reading assignments (handouts) will be given out in class or available on the Knowledge course website.

- The following texts are **optional** and can either be purchased through the publisher ([www.elsevier.com](http://www.elsevier.com)) or from [www.amazon.com](http://www.amazon.com) . They are available for review only from Mrs. Luxmore:
  - **Davies B, Logan J. Reading research: a user-friendly guide for nurses and other health professionals. 4<sup>th</sup> ed. Toronto (ONT): Elsevier Canada; 2008.**
  - **Burns N, Grove S. Understanding nursing research: building an evidence-based practice. 4<sup>th</sup> ed. St. Louis (MO): Saunders/Elsevier; 2007.**
- Other reference texts are available through Ms. Luxmore and Dr. Neely to enhance the student's understanding of course material. Please see either instructor for additional materials to supplement required readings, if needed.

## **Evaluation and Grading**

### **Grading Scale**

<b>A</b>	= 94-100%
<b>A-</b>	= 90-93%
<b>B+</b>	= 87-89%
<b>B</b>	= 83-86%
<b>B-</b>	= 80-82%
<b>C+</b>	= 77-79%
<b>C</b>	= 73-76%
<b>C-</b>	= 70-72%
<b>D+</b>	= 67-69
<b>D</b>	= 60-66
<b>F</b>	= below 60%
<b>W</b>	Withdraw, no credit
<b>I</b>	Incomplete, a temporary grade not of record

## **Course Evaluation Methods**

Student evaluation measures include evidence of class participation and attendance, quizzes/assignments, and two written examinations (mid-term and final). Written Examinations will be graded based on the percentage of questions answered correctly.

<b>Evaluation Format</b>	<b>Percent of final grade</b>
Daily Quizzes/Assignments (10 points each)	<b>20 %</b>
Written Mandatory Mid-term Exam	<b>25 %</b>
Group Assignment: Interpretation of a Scientific Article	<b>20%</b>
Written Mandatory Final Exam	<b>25%</b>
Class participation and attendance	<b>10 %</b>
<b>TOTAL</b>	<b>100 %</b>

- There are **no make-ups** for missed quizzes. A **zero** grade will be recorded for a missed quiz unless documented excused absence is given.
- The lowest graded quiz or assignment will be dropped.
- **Attendance**  
Attendance at all class sessions is critical to learning and is mandatory. One absence is allowed. Excessive tardiness will be monitored and may negatively affect your grade. Attendance will be graded based on the following scale:

Present and on time for all sessions	100% (of the 10% of course grade)
One absence	100%
Two absences	50%
More than two absences	0%

**Addendum's for DH 828 Scientific Literature regarding required procedures, policy changes, scheduling changes, or related issues will be discussed/distributed as needed.**

**COURSE SCHEDULE**

	<b>Assigned reading must be completed <u>BEFORE</u> class.</b>	<b>At the course director's discretion, students may be quizzed on contents of assigned materials.</b>
Wed, June 4 8:00-9:50 a.m.  lecture 1	<b>See course website for Research Terminology List</b>  <b>Terminology I:</b> Data, Descriptive & Experimental Research, Evidence Based Decision Making, Hypothesis, MEDLINE, Qualitative & Quantitative Prospective, Research, Retrospective, Scientific Method	<b><u>Introduction</u></b>  <ul style="list-style-type: none"> <li>• Course Syllabus</li> <li>• Evidence Based Decision Making</li> <li>• Introduction to Research &amp; Scientific Method</li> </ul>
Friday, June 6 10:00-11:50a.m.  lecture 2	<b>READ:</b> <ul style="list-style-type: none"> <li>• Chapter 2, pp 28-31 (incl. Box 2-5)</li> <li>• Chapter 15, pp 265-280</li> <li>• <b>Reviewing Scientific Articles (course website)</b></li> </ul> <b>Terminology II:</b> Abstract, Editorial Review Board, Ethics, Confidentiality, Informed Consent, IRB (Institutional Review Board), Literature Review, Meta-Analysis, Peer Reviewed, Professional Journal, Research Journal, Systematic Review	<b><u>Introduction</u></b>  <b>Quiz/Assignment on <u>previous</u> lecture/terminology</b>  <ul style="list-style-type: none"> <li>• Accessing Information</li> <li>• Publications/Articles</li> <li>• Literature Reviews/Systematic Reviews</li> <li>• Ethics in Research and the Role of the Institutional Review Board</li> </ul>
Wed, June 11 8:00-9:50 a.m.  lecture 3	<b>READ:</b> <ul style="list-style-type: none"> <li>• ADHA Research Agenda at: <a href="http://www.adha.org/research">www.adha.org/research</a></li> <li>• Handout: <b>Research articles: EMDM part I &amp; II</b></li> </ul> <b>Terminology:</b> Alternative hypothesis, Epidemiology, NULL hypothesis, Pilot Study, Deductive & Inductive Reasoning, Survey, Variable (dependent & independent; extraneous/confounding)	<b><u>Introduction</u></b>  <b>Quiz/Assignment on <u>previous</u> lecture/terminology</b>  <ul style="list-style-type: none"> <li>• Problem Formulation /Purpose of Study (question)</li> <li>• Research Proposal</li> <li>• Variables</li> <li>• Hypothesis/Null Hypothesis</li> </ul>
Friday, June 13 10:00-11:50 a.m.  lecture 4	<b>READ:</b> <ul style="list-style-type: none"> <li>• Chapter 11: pp187-197</li> <li>• Chapter 14: pp 229-232</li> <li>• Research Approaches/Designs (Course website)</li> <li>• Levels of Evidence (Course website)</li> </ul> <b>Terminology:</b> Blind Experiment (single, double), Bias (subject selection , misclassification, & confounding), Case Control, Case Report, Case Study, Clinical Trial, Cohort, Cohort Study, Control group, Cross Sectional, Intervention Trial, Longitudinal Study, Quasi-experimental, Research design, Sample (Census, Convenience, Judgmental, Random, Stratified Random, Systematic ),	<b><u>Methods &amp; Materials</u></b>  <b>Quiz/Assignment on <u>previous</u> lecture/terminology</b>  <ul style="list-style-type: none"> <li>• Research Approaches/Designs</li> <li>• Levels of Evidence</li> <li>• Sampling</li> <li>• Bias (related to study design)</li> <li>• Control of confounding/extraneous variables (in design phase)</li> </ul>

<p>Wed, June 18 8:00-9:50 a.m.</p> <p>lecture 5</p>	<p><b>READ:</b></p> <ul style="list-style-type: none"> <li>• <b>How to Read a Paper (Course website)</b></li> <li>• <b>Chapter 13: 216-217</b></li> <li>• <b>Chapter 14; pp 232-233</b></li> </ul> <p><b>Terminology:</b> Calibration (Intra-rater reliability, Inter-rater reliability), Measurement (measurement instrument), Measurement Level (nominal, ordinal, interval, ratio), Reliability, Validity (content, concurrent, correlation, predictive, construct).</p> <p><b>HOMEWORK: Popular Article Validity Assignment: Due Wednesday, July 9, 2008</b></p>	<p style="text-align: center;"><b><u>Methods &amp; Materials</u></b></p> <p><b>Quiz/Assignment on <u>previous</u> lecture/terminology</b></p> <p>Collecting Data</p> <ul style="list-style-type: none"> <li>• Measurement Instruments</li> <li>• Validity, Reliability</li> <li>• Levels of Measurement</li> </ul>
<p>Friday, June 20 10:00-11:50 a.m.</p> <p>lecture 6</p>	<p><b>READ:</b></p> <ul style="list-style-type: none"> <li>• <b>Chapter 14; pp 233-237</b></li> </ul> <p><b>Terminology:</b> Frequency, ( data matrix, Frequency Distribution), , Normal Distribution, Outlier, Skewed Distributions, Symmetric Distribution</p>	<p style="text-align: center;"><b><u>Results</u></b></p> <p><b>Quiz/Assignment on <u>previous</u> lecture/terminology</b></p> <p>Organizing and Displaying Descriptive Data</p> <ul style="list-style-type: none"> <li>• distributions</li> <li>• bar graphs</li> <li>• histograms</li> <li>• frequency curves</li> </ul> <p>Shapes of Distributions</p> <ul style="list-style-type: none"> <li>• the normal distribution</li> <li>• skewed distributions</li> </ul> <p style="text-align: center;"><b>Midterm Review</b></p>
<p><b>Wed, June 25 8:00-9:50 a.m.</b></p>	<p><b>MIDTERM</b></p>	
<p>Friday, June 27 10:00-11:50 a.m.</p> <p>lecture 7</p>	<p><b>READ:</b></p> <ul style="list-style-type: none"> <li>• <b>Chapter 14: pp238-242</b></li> </ul> <p><b>Terminology:</b> Measures of Central Tendency (Mean, Mode, Median), Measures of Dispersion (Range, Variance, Standard Deviation), Quartiles, Variability, 68-95-99% Rule (see "Normal Distribution").</p>	<p style="text-align: center;"><b><u>Results</u></b></p> <p><b>Quiz/Assignment on <u>previous</u> lecture/terminology</b></p> <p>Organizing Statistical Data</p> <ul style="list-style-type: none"> <li>• Percentile/Quartile</li> <li>• measures of central tendency</li> <li>• measures of variability/spread</li> <li>• Standard Deviation</li> </ul>
<p><b>Wed,</b></p>	<p><b>July 2, 2007</b></p>	<p>School Break – No Class</p>
<p><b>Friday</b></p>	<p><b>July 4, 2007</b></p>	<p>School Break – No Class</p>
<p>Wed, July 9 8:00-9:50 a.m.</p> <p>lecture 8</p>	<p><b>READ:</b></p> <ul style="list-style-type: none"> <li>• <b>Chapter 14: pp 242-246</b></li> <li>• <b>Chapter 11: pp197-198</b></li> </ul> <p><b>Terminology:</b> Association, Causation, Correlation, Pearson Correlation Coefficient, Odds ratio, Risk ratio, Sensitivity, Specificity</p>	<p style="text-align: center;"><b><u>Results</u></b></p> <p><b>Article Validity Assignment DUE</b></p> <p>Assessing Relationships</p> <ul style="list-style-type: none"> <li>• risk/odds ratio</li> <li>• association</li> <li>• correlation, Pearson Correlation Coefficient (r)</li> </ul>

<p>Friday, July 11 10:00-11:50 a.m.</p> <p>lecture 9</p>	<p><b>READ:</b></p> <ul style="list-style-type: none"> <li>• <b>Chapter 14: pp 246-250</b></li> </ul> <p><b>Terminology:</b> Confidence (Confidence Interval, confidence Level), Error (type I=Alpha; type II=Beta), , Probability, p-value, Statistical Tests (Non parametric, Parametric)</p> <p><b>HOMEWORK ASSIGNMENT, DUE WED JULY 23 CLASS: INTERPRETATION OF ARTICLE</b></p>	<p style="text-align: center;"><b><u>Results</u></b></p> <p><b>Quiz/Assignment on <u>previous</u> lecture/terminology</b></p> <p><b>Statistical Inference</b> Confidence Intervals</p> <ul style="list-style-type: none"> <li>• .Standard error</li> </ul> <p>Hypothesis testing</p> <ul style="list-style-type: none"> <li>• p-value/alpha level</li> <li>• Alpha/ Beta error</li> </ul>
<p>Wed, July 16 8:00-9:50 a.m.</p> <p>lecture 10</p>	<p><b>READ:</b></p> <ul style="list-style-type: none"> <li>• <b>Chapter 14: pp 250-262</b></li> </ul> <p><b>Terminology:</b> Clinical Significance, Statistical Significance, Statistical Tests (ANOVA, Chi square, t-test)</p>	<p style="text-align: center;"><b><u>Results</u></b></p> <p><b>Quiz/Assignment on <u>previous</u> lecture/terminology</b></p> <p>Common Statistical Tests</p> <ul style="list-style-type: none"> <li>• Non-parametric tests vs Parametric tests</li> </ul>
<p>Friday, July 18 10:00-11:50 a.m.</p> <p>lecture 11</p>		<p><b>Quiz/Assignment on <u>previous</u> lecture/terminology</b></p> <p>Drawing <b>Conclusions</b> from <b>Results</b> of the data analysis</p> <ul style="list-style-type: none"> <li>• Statistical Significance vs. Clinical Significance</li> <li>• Interpreting p-values and levels of significance and significant difference</li> </ul>
<p>Wed, July 23 8:00-9:50 a.m.</p> <p>lecture 12</p>	<p><b>READ:</b></p> <p>Forrest article: "Dental Hygienists' Knowledge, Opinions, ..." Forrest article: "Dental Hygienists' Knowledge, Opinions, ..."</p> <p><b>HOMEWORK ASSIGNMENT, DUE: INTERPRETATION OF ARTICLE</b></p>	<p>Quiz/Assignment on previous lecture/terminology</p> <p><b><u>Discussion</u></b></p> <ul style="list-style-type: none"> <li>• author speculation</li> <li>• strengths/weaknesses</li> <li>• relation of findings to current literature</li> <li>• indications of possible further research</li> </ul> <p><b><u>Conclusion</u></b></p> <ul style="list-style-type: none"> <li>• supported by actual findings of study?</li> </ul> <p><b>Critiquing/Reviewing Articles</b></p>
<p>Friday July 25 10:00-11:50 a.m.</p>		<p style="text-align: center;"><b>COURSE REVIEW</b> <b>"Who Wants to be a Researcher?"</b></p>
<p><b>Wed, July 30</b> <b>Time TBA</b></p>	<p style="text-align: center;"><b>FINAL EXAM</b></p>	