

**The Ohio State University
Freshman Seminar Program
Course Proposal**

Course Information.

1. Attach a sample syllabus that includes the following. (Sample syllabi can be found at <http://freshmanseminars.osu.edu>).
 - the course goals
 - a brief description of the content
 - the distribution of meeting times
 - a weekly topical outline
 - a listing of assignments
 - grade assessment information (A-E or S / U)
 - required textbooks and / or reading list
 - the academic misconduct and disability services statements (sample statements can be found at <http://artsandsciences.osu.edu/currofc/resources.cfm>)

2. Attach a brief biographical paragraph that includes the current research interests, teaching awards and honors, and undergraduate courses taught by the participating instructor(s). The paragraph will be included in materials for first-year students.

Eric Bielefeld - Speech and Hearing Science

Proposer's Name and Academic Unit

Eric Bielefeld

Proposer's Signature

bielefeld.6@osu.edu

614-292-9436

Proposer's e-Mail Address

Contact Phone Number

4/4/2016

Submission Date

[Signature]
Signature Department Chair of Academic Unit

Please indicate the semester you would like to offer the seminar: AU' X SP'

This form and any attachments should be mailed to Freshman Seminar Program, 100 Denney Hall, 164 Annie & John Glenn Avenue, ATTN: Dawn Nolen or e-mailed to nolen.2@osu.edu. For additional information, please call 614/292-4680.

The Ohio State University
Freshman Seminar Program – Arts & Sciences 1138. ____ (Proposal)
Autumn 2016

Title: Noise-induced hearing loss,

Credits: 1

Grading: S/U

Meeting time: Tuesdays, 1:50-2:45

Description: Noise-induced hearing loss is a public health problem that affects people from all parts of the world, at all ages, and from all walks of life. The course will discuss the phenomenon as a health problem, with focus on the biology of noise-induced injury and the communication deficits that result from the hearing loss. We will explore the cutting-edge research from the last 10 years that has changed how we view noise-induced hearing loss. Finally, we will discuss hearing conservation approaches to prevent hearing loss in at-risk populations.

Professor: Eric Bielefeld, Ph.D.

Associate Professor, Speech and Hearing Science

College of Arts and Sciences

bielefeld.6@osu.edu

Phone: 292-9436

Office 104c Pressey Hall

Course goals:

- (1) To define parameters of hazardous noise acoustics.
- (2) To explore the normal functioning inner ear and how it is damaged by hazardous noise.
- (3) To understand how research over the last 10 years has re-defined our understanding of the problem and the steps that need to be taken to prevent it.
- (4) To develop methods to raise awareness:
 - a. of noise has an environmental hazard
 - b. that all noise-induced hearing loss is completely preventable
 - c. of the long-term negative consequences of noise injury on communication
 - d. of the variety of effective protection methods available to protect against noise injury

Meetings: For this 1 credit course, you are expected to spend 2 additional hours a week preparing outside of class (reading, preparing for class discussion).

Weekly topical outline:

- | | |
|--------|---------------------------------|
| Week 1 | Overview of the auditory system |
| Week 2 | Functionality of the cochlea |
| Week 3 | Hearing testing |

Week 4	Hazardous noise
Week 5	Cochlear injury from noise
Week 6	Other auditory tissue injuries from noise
Week 7	Sensorineural hearing loss
Week 8	The interaction of noise-induced hearing loss and age-related hearing loss
Week 9	Tinnitus
Week 10	Hearing protection devices
Week 11	Music as a source of noise-induced hearing loss
Week 12	Molecular mechanisms of NIHL
Week 13	Drug protection from NIHL
Week 14	Dangerous Decibels
Week 15	Presentations and Discussion: What will you do to raise awareness of NIHL?
Finals Week	Final exam on the key takeaways from the course

Required Materials (Posted on Carmen):

(1) Dangerous Decibels materials:

- Interactive hearing loss simulator
- Package of different aspects of the workshop
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(2) Readings including, but not limited to, the following:

Week 1) Bielefeld (2016). Anatomy and Physiology of the Ear: Normal Function and the Damage Underlying Hearing Loss. From The Noise Manual, 6th Edition.

Week 2) Dallos (1996). Overview: Cochlear Neurobiology. From Springer Handbook of Auditory Research Volume 8: The Cochlea.

Week 3) Bielefeld (2008). Teaching the hearing impaired: a guide to understanding hearing and hearing loss for educators. Long Island Education Review.

Week 4) Arenas and Suter (2014) Comparison of occupational noise legislation in the Americas: An overview and analysis. Noise and Health.

Week 5) Bielefeld (2016). Anatomy and Physiology of the Ear: Normal Function and the Damage Underlying Hearing Loss. From The Noise Manual, 6th Edition.

Week 6) Fernandez et al. (2015) Aging after Noise Exposure: Acceleration of Cochlear Synaptopathy in “Recovered” Ears. Journal of Neuroscience.

Week 8) Bielefeld (2011). Effects of Early Noise Exposure on Subsequent Age-Related Changes in Hearing. From Springer Handbook of Auditory Research Volume 40: Noise-induced hearing loss.

Week 9) Møller (2016) Sensorineural Tinnitus: Its Pathology and Probable Therapies. International Journal of Otolaryngology.

Week 10) Verbeek et al. (2012) Interventions to prevent occupational noise-induced hearing loss. The Cochrane Database of Systematic Reviews. Pages 1-25.

Week 11) Portnuff (2016) Reducing the risk of music-induced hearing loss from overuse of portable listening devices: understanding the problems and establishing strategies for improving awareness in adolescents. Adolescent Health, Medicine and Therapeutics

Week 12) Henderson et al. (2006) The role of oxidative stress in noise-induced hearing loss. Ear and Hearing.

Week 13) Le Prell et al. (2007) Mechanisms of noise-induced hearing loss indicate multiple methods of prevention. Hearing Research

Week 14) Griest et al. (2007) Effectiveness of "Dangerous Decibels," a school-based hearing loss prevention program. American Journal of Audiology

Assignments:

Class participation	30%
Final presentation	35%
Final exam	35%
TOTAL	100%

Class Participation consists of attendance at class meetings and actively providing questions and answers during the class meetings.

Final Presentation consists of an oral presentation made in groups of 2-3 students describing a novel approach your group would take to raising awareness of NIHL as a problem. The group

will choose the population to whom they wish to send their message, the medium through which they will communicate it, and the content of that message.

Final exam: consists of written questions on the key topics from the course. “Takeaway” messages from each course topic will be highlighted week-to-week, and the final exam will explore the extent to which the student has retained that information going forward.

Academic Misconduct: Academic misconduct is a violation of the code of student conduct and is required to be reported to the Committee on Academic Misconduct (faculty rule 3335-31-02). Academic misconduct is defined by the University as any activity that compromises the academic integrity of the university or subverts the educational process. Examples include but are not limited to: plagiarism, cheating on examinations, violation of course rules outlined in this syllabus. Consult student handbook for further information. Any student caught cheating or giving assistance to another student on an exam or project will automatically receive a zero for that exam/project.

Disability Accommodations. Appropriate accommodations will be made for students with disabilities that have been certified by the Office of Disabilities Services. Students with certified disabilities are responsible for notifying the instructor as soon as possible so accommodation arrangements can be made. This syllabus is available in alternate format upon request. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292 3307, TDD 292 0901; on the web at <http://www.ods.ohio-state.edu>

Brief Biographical Paragraph for Bielefeld:

Dr. Eric Bielefeld is an associate professor in the department of Speech and Hearing Science (SHS). His research interests focus on the inner ear damage that underlies different forms of acquired hearing loss and how it can be prevented. Dr. Bielefeld presents his research at national and international conferences in otolaryngology, audiology, and speech-language pathology, publishes in several different journals across multiple disciplines, and has published five book chapters on noise-induced hearing loss. He currently teaches two undergraduate courses in the SHS undergraduate program (SHS 4540: Introduction to Audiology and SHS 5760: Neurology of the Speech and Hearing Mechanism), and three courses in the graduate audiology program. He also advises undergraduate research thesis projects, Au.D. program capstone projects, and Ph.D. graduate students. He is a member of the Dangerous Decibels faculty, a team of audiologists and academic faculty from around the world who train members of the community to give educational workshops in schools on the dangers of noise-induced hearing loss and the methods kids and adults can use to prevent it. He is also a member of Ohio State's new Marching and Athletic Bands Student Wellness Team, a group of Ohio State faculty and staff whose goal is to maintain and optimize the health of our bands during and after their time at Ohio State. Dr. Bielefeld is focused on protecting their hearing.