GERO 498: Nutrition, Genes, Longevity and Diseases

Maymester Spring/Summer 2022
4 Units

April 29

Time: **2:00pm - 4:50pm PDT** or 9-12 AM PDT (See specific class)
Room: GER 230 First week ONLY - All other lectures will be held online using the Zoom application

Course Instructors:

Raffaella GHITTONI, Ph.D.
Phone: (213)-740-8352 E-mail: rghitton@usc.edu

Office Hours: By appointment on Zoom

Please note that E-mail is the best way to be sure to contact the instructor

Course Description

This course is intended to teach students about the important role of nutrition and genes and the impact each has on longevity and diseases, particularly diseases related to aging. This course is unique in that it approaches these subjects through a traditional didactic approach as well as a "on location" approach to learning. This is accomplished by allowing students to have the opportunity to learn in an environment that has proven to be conducive to healthy aging. Students will be encouraged to observe and compare the lifestyle choices people make through their activities of daily living and dietary choices. Students will also be strongly encouraged to live as much as possible the Mediterranean life style with emphasis on the Mediterranean diet and an active lifestyle. In particular the class will try to emphasize the Mediterranean diet and life style of 50-100 years ago, which is still adopted by the older population but often not by younger individuals. For many students, this month-long immersion in the Mediterranean life style, could have a life-long impact.

In the classroom students will examine the effect of nutrition and genes modulated by nutrients on aging and life span in simple organisms and humans. The course will provide an introduction to the biology of aging and to the mechanisms for the extension of the healthy life span and the prevention of age-related diseases. The course will also describe the effect of common but also extreme diets and of diets adopted by very long-lived populations from around the world on aging and diseases. Specific populations with unusually long life spans will be examined as part of the course. Finally the course will discuss the role of diets, dietary restriction and fasting in the treatment of diseases with emphasis on cancer, diabetes, cardiovascular and neurodegenerative diseases. Students will be given actual case reports from doctors and/or clinical trials describing the translation of these approaches to disease prevention and treatment. For example, they will learn about the effects of fasting on the side effects caused by chemotherapy and they will see the effects of dietary restriction on hypertension and diabetes. Students will be responsible for more in-depth study of selected topics through assigned readings.

Prerequisite
It is recommended that students have had 1 prior undergraduate-level courses in biology. However, students without this background, can still perform well in the class with the appropriate effort.

Course Objectives
By the conclusion of the course, students are expected to be able to:

1) Understand the fundamental biology underlying aging and age-related diseases.
2) Understand the role of different dietary components on gene expression, cell function and protection, aging and diseases.
3) Describe the type of diets that can extend the healthy life span and why.
4) Understand how biogerontology can be applied to disease treatment and its role in medicine.
5) Have a general understanding of the role of different types of exercise on physiology, aging and diseases.
6) Understand how to apply evolutionary and comparative biology approaches to the optimization of health, disease prevention and treatment.
7) Students should be able to identify the differences that are known to affect aging and diseases.

Online Course Materials:
Course materials and announcements will be posted on the Blackboard website. Your USC e-mail username and password will allow you to access the secure site: https://blackboard.usc.edu (if you have trouble with Blackboard, please contact blackboard@usc.edu)
Students are responsible for checking additional postings and announcements on Blackboard website on a daily basis.

Students with Disabilities (the information below was provided by the office of the Provost)
"Any student requesting academic accommodations based on a disability is required to register with *The Office of Student Accessibility Services (OSAS)* each semester. A letter of verification for approved accommodations can be obtained from OSAS office. Please be sure that the letter is delivered to any of the instructors as early in the semester as possible. *The Office of Student Accessibility Services* (OSAS) -phone (213) 740-0776 osas@usc.edu

Statement on Academic Integrity
USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus,* the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

Textbook
None. Articles will be used instead of the textbook and distributed at the beginning of the class. Students will have to become familiar with pubmed searches and with identifying and downloading articles

Full text journals

Many full text journals are available to free to USC students at USC Library Pub Med https://libraries.usc.edu/databases/pubmedusc

If signing in from outside USC, the USC username and password used for emails will be required.

Student Evaluation

Students will be evaluated on the basis of:

1) Midterm (45%)
2) Final (45%)
3) Attendance and participation (10%)

Gero 498 CLASS SCHEDULE

WEEK 1 class meets on the USC Campus
WEEKS 2, 3 and 4 All class are on-line

WEEK 1

Tuesday, May 17: Meet in Room GER 230. Orientation to Class. Overview of Genoa, Italy. Introduction to the class, format, travel and accommodations. Valter Longo, Introduction to Aging

Reading: In Northern Italy, the Agony of Aging not so Gracefully. New York Times Sept. 22 2006.
http://www.nytimes.com/2006/09/22/world/europe/22genoa.html

Readings:

http://www.sciencemag.org/content/328/5976/321/suppl/DC2
(a slide show introduction to aging by *Science* magazine)

Extending the Healthy Life span: from yeast to humans. Fontana, L, Partridge, L., Longo VD. *Science*, April 16, 328, 321-6.

Infection, inflammation, height, and longevity. Eileen M. Crimmins* and Caleb E. Finch. 498–503 PNAS January 10, 2006 vol. 103 no. 2

Evolution of the human lifespan and diseases of aging: Roles of infection, inflammation, and nutrition Caleb E. Finch. 1718–1724 PNAS January 26, 2010 vol. 107 suppl. 1

Wednesday, May 18. Introduction to aging. Caleb Finch (Guest Lecture)

Readings:

Woodward NC et al.; "Prenatal and early life exposure to air pollution induced hippocampal vascular leakage and impaired neurogenesis in association with behavioral deficits." Transl Psychiatry. 2018 Nov 29;8(1):261.

Cacciottolo et al.; "Particulate air pollutants, APOE alleles and their contributions to cognitive impairment in older women and to amyloidogenesis in experimental models." Transl Psychiatry (2017) 7, e1022

Thursday, May 19: Sugar, obesity and diseases. Michael Goran (Guest Lecture)

"Role of Dietary Sugars in Obesity and Related Metabolic Diseases"

Michael Goran is a Professor of Preventive Medicine, Physiology and Biophysics He is the founding Director of the USC Childhood Obesity Research Center and holds the Dr Robert C and Veronica Atkins Endowed Chair in Childhood Obesity and Diabetes.

Dietary consumption patterns have shifted during the course of prior generations towards greater consumption of sugars, sugary beverages and fructose and an earlier introduction of these sugars to infants. These changes have important implications in the development of obesity and risk of metabolic diseases including type 2 diabetes, cardiovascular disease and non alcoholic fatty liver disease (NAFLD). These dietary shifts are also likely to have a greater impact during infancy and childhood because infants and children are also undergoing growth and development. Furthermore, increased dietary sugars have a greater impact on obesity and metabolic risk in certain segments of the population including Hispanics, those who are already obese, and in the case of NAFLD, those carrying the PNPLA3 genotype. In this lecture, I will review emerging studies indicating that consumptions of sugars and sugar sweetened beverages is beginning to occur early in life and this early life exposure is associated with increased risk of obesity by early childhood. In addition, I will review the evidence linking dietary intakes of sugars, especially fructose with altered metabolism and early obesity in animal models and limited human studies. I will review the evidence suggesting that high fructose exposure during critical periods of development of the fetus, neonate and infant can act as an obesogen by affecting lifelong neuroendocrine function, appetite control, feeding behaviour, adipogenesis, fat distribution and metabolic systems. These changes ultimately favour the long-term development of obesity and associated metabolic risk. This lecture will be presented by Dr Michael I Goran from the Keck School of Medicine. Dr Goran is Professor of Preventive Medicine, Co-Director of the USC Diabetes and Obesity Research Institute and the holder of the Atkins Endowed Chair in Childhood Obesity and Diabetes.

Suggested Reading

1. Ebbeling CB, Feldman HA, Chomitz VR, Antonelli TA, Gortmaker SL, Osganian SK, et al. A Randomized Trial of Sugar-Sweetened Beverages and Adolescent Body Weight. N Engl J Med. 2012. Epub 2012/09/25.
2. Davis JN, Whaley SE, Goran MI. Effects of Breastfeeding and Low Sugar-Sweetened Beverage Intake on Obesity Prevalence in Hispanic Toddlers. Am J Clin Nutr. 2012;95(1):3-8. Epub 2011/12/16.
3. Yang Q, Zhang Z, Gregg EW, Flanders WD, Merritt R, Hu FB. Added Sugar Intake and Cardiovascular Diseases Mortality among Us Adults. JAMA Intern Med. 2014. Epub 2014/02/05.
4. Park S, Pan L, Sherry B, Li R. The Association of Sugar-Sweetened Beverage Intake During Infancy with Sugar-Sweetened Beverage Intake at 6 Years of Age. Pediatrics. 2014;134 Suppl 1:S56-62.

5. Goran MI, Dumke K, Bouret SG, Kayser B, Walker RW, Blumberg B. The Obesogenic Effect of High Fructose Exposure During Early Development. Nat Rev Endocrinol. 2013. Epub 2013/06/05.
6. Goran MI, Ventura EE. Genetic Predisposition and Increasing Dietary Fructose Exposure: The Perfect Storm for Fatty Liver Disease in Hispanics in the U.S. Dig Liver Dis. 2012;44(9):711-3.

Friday , May 20. Aging and Alzheimer's Disease Christian Pike. (Guest Lecture)

Readings:
The Amyloid Hypothesis of Alzheimer's Disease: Progress and Problems on the Road to Therapeutics John Hardy and Dennis J. Selkoe *Science* **297,** 353 (2002);
DOI: 10.1126/science.1072994

When neurogenesis encounters aging and disease
Orly Lazarov1, Mark P. Mattson2, Daniel A. Peterson3, Sanjay W. Pimplikar4 and Henriette van Praag2 . Trends in Neurosciences, December 2010, Vol. 33, No. 12.

Microglia: scapegoat, saboteur, or something else? Aguzzi A, Barres BA, Bennett ML. Science. 2013 Jan 11;339(6116):156-61.

WEEK 2

Tuesday, May 24: 1)**Introduction to the biology of aging (continued), theories and aging mechanisms at the molecular, and cellular level**. Raffaella Ghittoni

Readings:

http://www.sciencemag.org/content/328/5976/321/suppl/DC2

(a slide show introduction to aging by *Science* magazine)

Extending the Healthy Life span: from yeast to humans. Fontana, L, Partridge, L., Longo VD. *Science*, April 16, 2010, 328, 321-6.

Longo, VD, Mitteldorf J., and Skulachev, V. Programmed and Altruistic Aging. *Nature Reviews Genetics* 2005, 6:866-872.

Sci Am. 2010 Sep;303(3):42-9. Why can't we live forever? Kirkwood T.

Aging in microorganisms. Raffaella Ghittoni

1. Readings: Replicative aging in yeast: the means to the end. Steinkraus KA, Kaeberlein M, Kennedy BK Annu Rev Cell Dev Biol. 2008;24:29-54. Review,
2. Fabrizio P, Longo VD. The chronological life span of *Saccharomyces cerevisiae*. *Methods Mol Biol.* 2007;371:89-95.

3. Extending the Healthy Life span: from yeast to humans. Fontana, L, Partridge, L., Longo VD. *Science*, April 16, 2010, 328, 321-6.

Wednesday, May 25. **Genetics of Aging in mice and humans**. Raffaella Ghittoni

Yan L et al 2007 Type 5 adenylyl cyclase disruption increases longevity and protects against stress. Cell. 130:247-58.

Extending the Healthy Life span: from yeast to humans. Fontana, L, Partridge, L., Longo VD. *Science*, April 16, 2010, 328, 321-6.

Growth hormone receptor deficiency is associated with a major reduction in pro-aging signaling, cancer and diabetes in humans. Guevara-Aguirre J, Balasubramanian P, Guevara-Aguirre M, et al. *Science Transl Med*. 2011 Feb 16;3(70):

Thursday May 26. **Cancer and aging**: from the mechanisms of tumorigenesis, to standard treatment to anti-aging approaches for its prevention and treatment. Raffaella Ghittoni

Readings:

a. Case reports from Safdie et al. Fasting and Cancer Treatment in Humans. A case series report. *Aging*. 2009, 1(12): 988-1007
b. Hanahan and Weinberg. The Hallmarks of Cancer. Cell, Vol. 100, 57–70, January 7, 2000.
c. Raffaghello, L. , Lee, C. , Safdie, F.M., Wei, M., Madia, F. , Gonidakis, S. Bianchi, G. , and Longo V.D. Starvation-dependent Differential Stress Resistance Protects Normal but not Cancer Cells Against High Dose Oxidants/Chemotherapy. *PNAS*, 2008 Mar 3.
d. Longo VD., Lieber, M., and Vijg, J. Turning Anti-aging genes against Cancer. *Nature Reviews Molecular Cell Biology*, Nov. 2008, 902.

Friday, May 27. Dr.Sebastian Brandhorst (Guest Lecture)

WEEK 3

MONDAY MAY 30 NO CLASS – MEMORIAL DAY .

Tuesday, May 31. Dietary restriction, Exercise in aging and cardiovascular risk factor/diseases. Raffaella Ghittoni.

Readings:

Exercise, aging and diseases Exercise and longevity. Studies in rats. Holloszy JO. J Gerontol. 1988 Nov;43(6):B149-51. Review.

Biological Mechanisms of Physical Activity in Preventing Cognitive Decline.

Lista et al *Cell* Mol Neurobiol (2010) 30:493–503.

Aging, training, and the brain: A review and future directions Neuropsychol Rev. 2009 December ; 19(4): 504–522.

Habitual exercise and vascular ageing. Seals et al. J Physiol 587.23 (2009) pp 5541–5549

Wednesday June, 1: MIDTERM

MIDTERM COVERS UP TO Wednesday May 25 LECTURE ON GENETICS OF AGING IN MICE AND HUMANS

Thursday, June 2: Nutrition, dietary restriction, aging and diseases: Parts 1 and 2. From the fundamental role of various nutrients on aging in model organisms and mammals, to the Mediterranean diet to the diets of long-lived and short-lived populations from around the world and their effect on life span and diseases. Raffaella Ghittoni

Readings:

Colman RJ, Anderson RM, Johnson SC, Kastman EK, Kosmatka KJ, Beasley TM, Allison DB, Cruzen C, Simmons HA, Kemnitz JW, Weindruch R. Caloric restriction delays disease onset and mortality in rhesus monkeys. *Science*. 2009 Jul 10;325(5937):201-4

Caloric restriction reduces age-related and all-cause mortality in rhesus monkeys Nat Commun. 2014 Apr 1;5:3557. Colman RJ1, Beasley TM2, Kemnitz JW3, Johnson SC4, Weindruch R4, Anderson RM4.

Impact of caloric restriction on health and survival in rhesus monkeys from the NIA study . Nature. 2012 Sep 13;489(7415):318-21.Mattison JA1, Roth GS, Beasley TM, Tilmont EM, Handy AM, Herbert RL, Longo DL, Allison DB, Young JE, Bryant M, Barnard D, Ward WF, Qi W, Ingram DK, de Cabo R.

Extending the Healthy Life span: from yeast to humans. Fontana, L, Partridge, L., Longo VD. *Science*, April 16, 328, 321-6

Longo VD, Fontana L. Calorie restriction and cancer prevention: metabolic and molecular mechanisms. *Trends Pharmacol Sci*. 2010 Feb;31(2):89-98

Low-carbohydrate diets and all-cause and cause-specific mortality: two cohort studies. Fung TT, van Dam RM, Hankinson SE, Stampfer M, Willett WC, Hu FB. Ann Intern Med. 2010 Sep 7;153(5):289-98

Vegetarian Dietary Patterns Are Associated With a Lower Risk of Metabolic Syndrome. Rizzo et al. Diabetes Care 34:1225–1227, 2011

Association between the Mediterranean diet and cancer risk: a review of observational studies. Verberne L, Bach-Faig A, Buckland G, Serra-Majem L. Nutr Cancer. 2010;62(7):860-70

Am J Clin Nutr. 2010 Nov;92(5):1189-96. Epub 2010 Sep 1.
Accruing evidence on benefits of adherence to the Mediterranean diet on health: an updated systematic review and meta-analysis. Sofi F, Abbate R, Gensini GF, Casini A.

Olive Oil and Cardiovascular Health Mar´ıa-Isabel Covas. *Cardiovasc Pharmacol* Volume 54, Number 6, December 2009

Exp Gerontol. 2004 Sep;39(9):1423-9.Identification of a geographic area characterized by extreme longevity in the Sardinia island: the AKEA study. Poulain M, Pes GM, Grasland C, Carru C, Ferrucci L, Baggio G, Franceschi C, Deiana L.

Caloric Restriction, the Traditional Okinawan Diet, and Healthy Aging
The Diet of the World's Longest-Lived People and Its Potential Impact on Morbidity and Life Span BRADLEY J. WILLCOX[1,2]et al Annals of the New York Academy of Sciences Volume 1114, Healthy Aging and Longevity: Third International Conference pages 434–455, October 2007.

Longo VD, Mattson MP. Fasting Molecular Mechanisms and clinical applications. Cell Metab. 2014 Feb 4;19(2):181-92. 2014 Jan 16.

Primary prevention of cardiovascular disease with a Mediterranean diet.
Estruch R et al N Engl J Med. 2013 Apr 4;368(14):1279-90. doi: 10.1056/NEJMoa1200303. Epub 2013 Feb 25.

Association of nut consumption with total and cause-specific mortality.N Engl J Med. 2013 Nov 21;369(21):2001-11. doi: 10.1056/NEJMoa1307352.Bao Y1, Han J, Hu FB, Giovannucci EL, Stampfer MJ, Willett WC, Fuchs CS.

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Low protein intake is associated with a major reduction in IGF-I, cancer and overall mortality in the 65 and younger but not older population. Levine ME, Suarez JA, Brandhorst S, Balasubramanian P, Cheng CW, Madia F, Fontana L, Mirisola MG, Guevara-Aguirre J, Wan J, Passarino G, Kennedy BK, Wei M, Cohen P, Crimmins EM, Longo VD. Cell Metab. 2014 Mar 4;19(3):407-17. doi: 10.1016/j.cmet.2014.02.006.

Friday, June 3:

1) Continue June 2 lecture: Nutrition, dietary restriction, aging and diseases (part II)

WEEK 4

Tuesday June 7 CLASS AT 9-12 AM California Time Guest Lecture

Romina Cervigni, PhD. The use of the longevity diet and fasting in the prevention and treatment of diseases of aging

Wednesday , June 8 R Ghittoni,. **Nutrition, Fasting Mimicking Diets Stem cells and Regeneration in the treatment and prevention of diseases**. A) An introduction to regenerative medicine, its potential and the difficulties and potential pitfalls. B) The use of fasting mimicking diets to promote regeneration and rejuvenation in disease prevention and treatment Raffaella Ghittoni

Readings:

a. Gass P, Riva MA 2007 CREB, neurogenesis and depression. Bioessays. 29:957-61.

b. Morgan D.2007 Amyloid, memory and neurogenesis. Exp Neurol. 205:330-5. Mar 14.

c. Yamasaki TR, et al 2007. Neural stem cells improve memory in an inducible mouse model of neuronal loss. J Neurosci. 27:11925-33.

d. Rando TA. 2006 Stem cells, ageing and the quest for immortality. Nature. 441:1080-6.

Longo VD, Panda S. Fasting, Circadian Rhythms, and Time-Restricted Feeding in Healthy Lifespan. Cell Metab. 2016;23(6):1048-59. doi: 10.1016/j.cmet.2016.06.001. PubMed PMID: 27304506.

M Wei,S. Brandhorst, M. Shelehchi,H.Mirzaei,CW Cheng,J. Budniak,S.Groshen,WJ. Mack,,E.Guen,S Di Biase,P.Cohen,TEMorgan,T Dorff,K.Hong,A.Michalsen,A.Laviano,**VD. Longo**, Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease Wei et al., Sci. Transl. Med. 9, eaai8700 (2017) 15 Feb 2017:Vol. 9, Issue 377, DOI: 10.1126/scitranslmed.aai8700 PubMed PMID:28202779

Choi IY, Lee C, **Longo VD**. Nutrition and fasting mimicking diets in the prevention and treatment of autoimmune diseases and immunosenescence. Molecular and cellular endocrinology. 2017. doi: 10.1016/j.mce.2017.01.042. PubMed PMID: 28137612.

Thursday June 9 R Ghittoni,. **Intermittent Fasting, Therapeutic Fasting, and Ketogenic Diets**.

An introduction to: 1) The different and most popular intermittent fasting practices including alternate day fasting, 16:8, 5:2 and alternate day fasting, 2) Therapeutic fasting, as practiced by in patient clinics, 3) Ketogenic diets

Longo VD,Mattson MP. Fasting: Molecular Mechanisms and Clinical Applications. Cell Metab. 2014 Feb. 4;19(2):181-192.doi 10.1016 PMID:24440038

Mattson MP, Allison DB, Fontana L, Harvie M,Longo VD,Malaisse WJ, Mosley M, Notterpek L, Ravussin E, Scheer FA, Syefried TN, Varady KA, Panda S. Meal frequency and timing in health and disease. Proc Natl Acad Sci USA 2014 Nov 25; 111(47); 16647-53. Doi PMID:25404320 PMCID:PMC4250148

Longo VD, Panda S. Fasting, Circadian Rhythms, and Time-Restricted Feeding in Healthy Lifespan. Cell Metab. 2016;23(6):1048-59. doi: 10.1016/j.cmet.2016.06.001. PubMed PMID: 27304506.

Optimizing glycemic control in type 2 diabetic patients through the use of a low-carbohydrate, high-fat,ketogenic diet: areviewof two patients in primary care. Rallis S.
Diabetes Metab Syndr Obes 2019 Mar 5;12:299-303. doi: 10.2147/DMSO.S195994. eCollection 2019.

Friday June 10

Final Exam **COVERS Material from Thursday May 26 Lecture on "Cancer and aging"**

COURSE SCHEDULE SUMMARY

Weeks	Date	Topics Covered	Reading assignment
Week 1	M 5/13	NO CLASS	
	Tu 5/17	V. Longo - Course Overview -Introduction to Aging	
	W 5/18	V. Longo – Caleb Finch (TBA)	
	Th 5/19	V. Longo - Michael Goran (TBA)	
	F 5/20	V. Longo - Christian Pike (TBA)	
Week 2	M 5/23	NO CLASS	
	Tu 5/24	R. Ghittoni - Introduction to the biology of aging - theories and aging mechanisms at the molecular, and cellular level.	
	W 5/25	R. Ghittoni - Genetics of Aging in mice and humans.	
	Th 5/26	R. Ghittoni - Cancer and aging	
	F 5/27	Guest speaker: Dr. Sebastian Brandhorst	
Week 3	M 5/30	NO CLASS - MEMORIAL DAY	
	Tu 5/31	R. Ghittoni - Dietary restriction, Exercise in aging and cardiovascular risk factor/diseases.	
	W 6/1	MIDTERM Exam MIDTERM COVERS UP TO WEDNESDAY MAY 25 LECTURE ON GENETICS OF AGING IN MICE AND HUMANS	
	Th 6/2	R. Ghittoni - Nutrition, dietary restriction, aging and diseases: part 1.	
	F 6/3	R. Ghittoni - Nutrition, dietary restriction, aging and diseases: part 2.	
Week 4	M 5/30	NO CLASS	
	Tu 6/7	Guest Lecture: Dr. Romina Cervigni The use of the longevity diet and fasting in the prevention and treatment of diseases of aging Clinical cases	
	W 6/8	R. Ghittoni - Nutrition, Fasting Mimicking Diets Stem cells and Regeneration in the treatment and prevention of diseases.	
	Th 6/9	R. Ghittoni - Intermittent Fasting, Therapeutic Fasting, and Ketogenic Diets. .	
	F 6/10	**FINAL**	

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on Research and Scholarship Misconduct.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.
National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.
Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
eeotix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
osas.usc.edu
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

*Occupational Therapy Faculty Practice - (323) 442-33*40 or otfp@med.usc.edu
chan.usc.edu/otfp
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.