

Course Outline – FN4480G Special Topics: Maternal and Child Nutrition During the First 1,000 Days School of Food and Nutritional Sciences

General Information

Course #: FN4480G
Section #: Section 530
Term: Winter
Year: 2023
Delivery: In-person
Course Day and Time: Monday 6:30-9:30pm
Course Location: BR-UH27

Instructor Information

Name: Dr. Jamie Seabrook
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Office hours for students: Virtually by appointment
Office location: UH 317

Special Circumstances

In the event of a COVID-19 resurgence during the course that necessitates the course moving away from in-person delivery, course content may be delivered online either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). There may also be changes to any remaining assessments at the discretion of the course instructor. In the event of a COVID-19 resurgence, detailed information about the impact on this course will be communicated by the Provost and course instructor.

Course Description

Research in epigenetics and the developmental origins of health and disease (DOHaD) has shown that risk for chronic health conditions in adulthood (e.g., diabetes, cardiovascular disease, obesity, mental health disorders) are highly associated with our social environment, resources, and geographic location prior to and during the first 1,000 days after conception (i.e., up to 2 years of age). According to the Barker hypothesis, babies who are born low birth weight, preterm, small-for-gestational-age, and who have intrauterine growth restriction have a larger risk for developing chronic health conditions as adults. The idea behind fetal growth programming is that, if the fetus

is not well nourished in utero (e.g., under- or overnutrition), it programs itself to deliver more nutrients to the brain than other organs of the body (i.e., epigenetic changes), which then correlates with higher risk for metabolic disorders.

The main activities of this course include weekly reading and summarizing of research articles related to nutrition from conception to age 2 years, class discussion of research articles, a final research paper on a topic of choice, and a presentation of what you learned from your research paper. Students will also help lead the weekly discussions of the assigned readings.

Prerequisite: Registration in year 3 or 4 of the BScFN Honours Specialization in Nutrition and Dietetics, Honours Specialization in Food Science and Technology, Specialization in Foods and Nutrition or permission of the Division.

Course Readings

Al Rubaye H, Adamson CC, Jadavji NM. The role of maternal diet on offspring gut microbiota development: A review. *J Neurosci Res.* 2021; 99(1):284-293.

Amati F, Hassounah S, Swaka A. The Impact of Mediterranean Dietary Patterns During Pregnancy on Maternal and Offspring Health. *Nutrients.* 2019; 11(5):1098.

Baía I, Domingues RMSM. The effects of cannabis use during pregnancy on low birth weight and preterm birth: a systematic review and meta-analysis. *Am J Perinatol.* 2022 Jul 28. doi: 10.1055/a-1911-3326.

Borge TC, Aase H, Brantsæter AL, Biele G. The importance of maternal diet quality during pregnancy on cognitive and behavioural outcomes in children: a systematic review and meta-analysis. *BMJ Open.* 2017; 7(9):e016777.

Bolduc FV, Lau A, Rosenfelt CS, Langer S, Wang N, Smithson L, et al. Cognitive Enhancement in Infants Associated with Increased Maternal Fruit Intake During Pregnancy: Results from a Birth Cohort Study with Validation in an Animal Model. *EBioMedicine.* 2016; 8:331-340.

Brown RA, Dakkak H, Seabrook JA. Is Breast Best? Examining the effects of alcohol and cannabis use during lactation. *J Neonatal Perinatal Med.* 2018; 11(4):345-356.

Desrosiers TA, Siega-Riz AM, Mosley BS, Meyer RE; National Birth Defects Prevention Study. Low carbohydrate diets may increase risk of neural tube defects. *Birth Defects Res.* 2018; 110(11):901-909.

Francis EC, Dabelea D, Shankar K, Perng W. Maternal diet quality during pregnancy is associated with biomarkers of metabolic risk among male offspring. *Diabetologia.* 2021; 64(11):2478-2490.

Goldstein RF, Abell SK, Ranasinha S, Misso M, Boyle JA, Black MH, et al. Association of Gestational Weight Gain With Maternal and Infant Outcomes: A Systematic Review and Meta-analysis. *JAMA.* 2017; 317(21):2207-2225.

Greer FR, Sicherer SH, Burks AW; COMMITTEE ON NUTRITION; SECTION ON ALLERGY AND IMMUNOLOGY. The Effects of Early Nutritional Interventions on the Development of Atopic Disease

in Infants and Children: The Role of Maternal Dietary Restriction, Breastfeeding, Hydrolyzed Formulas, and Timing of Introduction of Allergenic Complementary Foods. *Pediatrics*. 2019; 143(4):e20190281.

Hsu CN, Tain YL. The Double-Edged Sword Effects of Maternal Nutrition in the Developmental Programming of Hypertension. *Nutrients*. 2018; 10(12):1917.

Lacagnina S. The Developmental Origins of Health and Disease (DOHaD). *Am J Lifestyle Med*. 2019; 14(1):47-50.

Leonard SA, Petito LC, Stephansson O, Hutcheon JA, Bodnar LM, Mujahid MS, et al. Weight gain during pregnancy and the black-white disparity in preterm birth. *Ann Epidemiol*. 2017; 27(5):323-328.e1.

Mustapa Kamal Basha MA, Majid HA, Razali N, Yahya A. Risk of eczema, wheezing and respiratory tract infections in the first year of life: A systematic review of vitamin D concentrations during pregnancy and at birth. *PLoS One*. 2020 Jun 15;15(6):e0233890.

Quyen PN, Nga HT, Chaffee B, Ngu T, King JC. Effect of maternal prenatal food supplementation, gestational weight gain, and breast-feeding on infant growth during the first 24 months of life in rural Vietnam. *PLoS One*. 2020 Jun 25;15(6):e0233671.

Seabrook JA, Smith A, Clark AF, Gilliland JA. Geospatial analyses of adverse birth outcomes in Southwestern Ontario: Examining the impact of environmental factors. *Environ Res*. 2019; 172:18-26.

Schwarzenberg SJ, Georgieff MK; COMMITTEE ON NUTRITION. Advocacy for Improving Nutrition in the First 1000 Days to Support Childhood Development and Adult Health. *Pediatrics*. 2018; 141(2):e20173716.

Tahir MJ, Haapala JL, Foster LP, Duncan KM, Teague AM, Kharbanda EO, et al. Higher Maternal Diet Quality during Pregnancy and Lactation Is Associated with Lower Infant Weight-For-Length, Body Fat Percent, and Fat Mass in Early Postnatal Life. *Nutrients*. 2019; 11(3):632.

Woods N, Gilliland J, Seabrook JA. The influence of the built environment on adverse birth outcomes. *J Neonatal Perinatal Med*. 2017;10(3):233-248.

Zaidi AZ, Moore SE, Okala SG. Impact of Maternal Nutritional Supplementation during Pregnancy and Lactation on the Infant Gut or Breastmilk Microbiota: A Systematic Review. *Nutrients*. 2021; 13(4):1137.

Learning Outcomes

Upon successful completion of this course, students will be able to demonstrate the Brescia Competencies of Communication, Critical Thinking, Inquiry and Analysis, Problem Solving, Self-Awareness and Development, and Social Awareness and Engagement by:

1. describing and interpreting the results of published research data through class discussions and reading reflections (Communication, Critical Thinking, Problem Solving);
2. writing a review paper related to nutrition during the first 1000 days (Communication, Critical Thinking, Inquiry and Analysis);

3. demonstrating the ability to gather, review, interpret, evaluate, and utilize appropriate peer-reviewed journal articles and reference materials to develop a research topic and write a review paper (Communication, Critical Thinking, Inquiry and Analysis, Problem Solving, Self-Awareness and Development);
4. presenting findings of a research paper to the class utilizing a research communications approach (Communication, Critical Thinking, Inquiry and Analysis, Problem Solving, Self-Awareness and Development, and Social Awareness and Engagement).

Brescia Competencies

Communication

The ability to exchange information and meaning across cultures, space, and time appropriately and correctly. This competency includes oral, written, and interpersonal communication, and the ability to use current or innovative media.

Critical Thinking

The ability to engage in thinking characterized by the rational, informed, independent, and open-minded exploration of issues, ideas, and events before accepting or formulating a conclusion.

Inquiry and Analysis

The ability to ask questions, examine issues, and reach informed conclusions by breaking down complex issues, exploring evidence, and describing relationships among persons, things, or events.

Problem Solving

The ability to create and execute a strategy to answer a question or achieve a goal. Includes being able to anticipate the consequence of a potential solution, select a strategy among several alternatives, and decide when an acceptable outcome has been reached.

Self-Awareness and Development

The ability to draw meaning, knowledge and value from honest and fair reflection and self-evaluation. Students are able to recognize their emotions and patterns of thinking, their impact on others, and make a commitment to personal growth.

Social Awareness and Engagement

The ability to respect and be open to diversity (e.g. cultural, religious, political) and social justice. Students take personal responsibility to actively engage in and contribute to creating positive change in local, regional, national, or global communities and societies.

Valuing

The ability to make decisions or choose actions based on the consistent application of principles expressing fundamental values that are accepted on account of reason or spiritual insight.

ICDEP Competencies

The ICDEP were created by The Partnership for Dietetic Education and Practice (PDEP), a network of professionals from education, regulatory, and professional bodies/associations across Canada. There are 7 inter-related Domains (areas) of Practice Competencies: Food and Nutrition Expertise, Professionalism and Ethics, Communication and Collaboration, Management and Leadership, Nutrition Care, Population Health Promotion, and Food Provision.

For more information on ICDEP competencies please visit the UWO OWL FN UNDERGRADUATE RESOURCES AND INFORMATION site.

Teaching Methodology and Expectations of Students

1. In-person lectures and class discussions on assigned readings with the expectation that all students participate and contribute to class discussion. Students will also have the opportunity to lead weekly discussion of the assigned articles.

Specific Course Policies are as follows:

1. Assignments are due at time and date noted. The mark will be reduced by 20% for assignments submitted late. Assignments submitted more than seven days late will NOT be accepted for marking, except with documentation for a confirmed personal illness or a death in the student's immediate family.

Copyright and Intellectual Property

PowerPoint lecture slides and notes, lists of readings, in-class activities, assignment guidelines, and other components of the course materials are typically the intellectual property of the instructor. Unauthorized reproduction through audio-recording, video-recording, photographing, sharing on social media, or posting on course-sharing websites is an infringement of copyright and is prohibited. Such action may be considered a Code of Conduct violation and lead to sanctions.

Evaluation

Evaluation Breakdown:

Component	Weight	Date/ Deadline	Learning Outcome	Brescia Competencies
Reading Reflections: 5 reflections worth 5% each	25%	Jan 16, Jan 30, Feb 13, Feb 27, Mar 13	1	Communication, Critical Thinking, Inquiry and Problem Solving

Class Discussion/ Participation	15%	Ongoing	1	Communication, Critical Thinking, Problem Solving
Final term paper (40%) and Presentation (20%)	60%	Presentations on April 3; Paper due April 10	1,2,3,4	Communication, Critical Thinking, Inquiry and Analysis, Problem Solving, Self-Awareness and Development, Social Awareness and Engagement

Academic Accommodation

For course components worth 10% or more of the total course grade, please see the Academic Policies and Regulations section at the end of this course outline or consult the Academic Calendar.

Course Content

Topics will be covered in the order listed and any dates listed are meant as a guideline.

Tentative weekly LECTURE:

LECTURES		
Date	Description	Description
Jan 9	Overview of course outline In utero early life exposures and adult disease	Why pregnancy matters
Jan 16	Developmental Origins of Health and Disease (DOHaD)	Lacagnina 2019; Schwarzenberg et al. 2018.
Jan 23	Maternal diet during pregnancy and cognitive outcomes in children	Borge et al. 2017; Bolduc et al. 2016.
Jan 30	Maternal diet during pregnancy and chronic health conditions in adulthood	Francis et al., 2021; Hsu & Tain, 2018;
Feb 6	Social determinants of adverse birth outcomes	Seabrook et al. 2019; Woods et al. 2017.
Feb 13	Gestational weight gain and birth outcomes	

		Goldstein et al. 2017; Leonard et al. 2017
Feb 20	READING WEEK	No Class
Feb 27	Nutrition and atopic disease in infants and children	Greer et al. 2019; Mustapa et al. 2020
Mar 6	Maternal diet and the offspring gut	Al Rubaye et al. 2021; Zaidi et al. 2021.
Mar 13	Maternal diet during pregnancy and lactation and child health	Quyen et al. 2020; Tahir et al. 2019;
Mar 20	Implications of specific dietary patterns during pregnancy on offspring health	Amati et al. 2019; Desrosiers et al. 2018.
Mar 27	Substance use during pregnancy and lactation on child health outcomes	Baia & Domingues 2022; Brown et al. 2018.
Apr 3	Research Presentations	
Apr 10	Final Paper Due	

2022-23 BRESCIA UNIVERSITY COLLEGE ACADEMIC POLICIES AND REGULATIONS

1. POLICY REGARDING ACADEMIC ACCOMMODATION

The complete policy regarding Accommodation for Illness - Undergraduate Students can be found at https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_135

Students who have long-term or chronic medical conditions which may impede their ability to complete academic responsibilities should seek Academic Accommodation through Student Accessibility Services (https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_10).

Personal commitments (e.g., vacation flight bookings, work schedule) which conflict with a scheduled test, exam or course requirement are **not** grounds for academic accommodation.

Students who experience an illness or extenuating circumstance sufficiently severe to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

1. For medical absences, submitting a **Student Medical Certificate (SMC)** signed by a licensed medical or mental health practitioner;
2. For non-medical absences, submitting **appropriate documentation** (e.g., obituary, police report, accident report, court order, etc.) to their Academic Advisor. Students are encouraged to contact their Academic Advisor to clarify what documentation is acceptable.

Request for Academic Consideration for a Medical Absence

When a student requests academic accommodation (e.g., extension of a deadline, a makeup exam) for work representing 10% or more of the student's overall grade in the course, it is the responsibility of the student to provide acceptable documentation to support a medical or compassionate claim. All such requests for academic accommodation **must** be made through an Academic Advisor and include supporting documentation.

Academic accommodation for illness will be granted only if the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete their academic responsibilities. Minor ailments typically treated by over-the-counter medications will not normally be accommodated.

The following conditions apply for students seeking academic accommodation on medical grounds:

1. Students must submit their Student Medical Certificate (SMC) along with a request for relief specifying the nature of the accommodation being requested no later than two business days after the date specified for resuming responsibilities. An SMC can be downloaded from https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf;
2. In cases where there might be an extended absence or serious issue, students should submit their documentation promptly and consult their Academic Advisor for advice during their recovery period;
3. Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, scheduled tests or examinations, and other academic requirements;
4. Students **must** communicate with their instructors **no later than 24 hours** after the end of the period covered by the SMC to clarify how they will fulfil the academic expectations they may have missed during the absence;
5. Appropriate academic accommodation will be determined by the Dean's Office/Academic Advisor in consultation with the course instructor(s). Academic accommodation may include extension of

deadlines, waiver of attendance requirements, arranging Special Exams (make-ups), re-weighting course requirements, or granting late withdrawal without academic penalty.

2. ACADEMIC CONCERNS

If you feel that you have a medical or personal challenge that is interfering with your work, contact your instructor and Academic Advisor as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. Retroactive requests for academic accommodation on medical or compassionate grounds are not normally considered.

If you think that you are too far behind to catch up or that your work load is not manageable, you should consult your Academic Advisor (https://brescia.uwo.ca/enrolment_services/academic_advising/book_an_appointment.php). If you consider reducing your workload by dropping one or more courses, this must be done by the appropriate deadlines; please contact your Academic Advisor or see the list of sessional dates in the Academic Calendar (<https://www.westerncalendar.uwo.ca/SessionalDates.cfm?SelectedCalendar=Live&ArchiveID=>).

You should consult with the course instructor and the Academic Advisor who can help you consider alternatives to dropping one or more courses. *Note that dropping a course may affect OSAP eligibility and/or Entrance Scholarship eligibility.*

3. ABSENCES

Short Absences: If you miss a class due to a minor illness or other problems, check your course outline for information regarding attendance requirements and make sure you are not missing a test or assignment. Cover any readings and arrange to borrow notes from a classmate. Contact the course instructor if you have any questions.

Please note that for asynchronous online courses, attendance or participation requirements may be different than for synchronous or in-person courses.

Extended Absences: If you have an extended absence, you should contact the course instructor and an Academic Advisor. Your course instructor and Academic Advisor can discuss ways for you to catch up on missed work, and arrange academic accommodations if appropriate and warranted.

It is important to note that the Academic Dean may refuse permission to write the final examination in a course if the student has failed to maintain satisfactory academic standing throughout the year or for too frequent absence from the class or laboratory (https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#Page_64).

4. SCHOLASTIC OFFENCES

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence at: https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_20.

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences. Note that such offences include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. Students are advised to consult the section on Scholastic Discipline for Undergraduate Students in the Academic Calendar.

If you are in doubt about whether what you are doing is inappropriate or not, consult your instructor, the Academic Dean's Office, or the Registrar. A claim that "you didn't know it was wrong" is not accepted as an excuse.

The penalties for a student guilty of a scholastic offence (including plagiarism) include refusal of a passing grade in the assignment, refusal of a passing grade in the course, suspension from the University, and expulsion from the University.

Plagiarism:

Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com.

Computer-marked Tests/exams:

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating. Software currently in use to score computer-marked multiple-choice tests and exams performs a similarity review as part of standard exam analysis.

5. PROCEDURES FOR APPEALING ACADEMIC EVALUATIONS

All appeals of a grade must be directed first to the course instructor. If the student is not satisfied with the decision of the course instructor, a written appeal is to be sent to the School Chair. If the response of the Chair is considered unsatisfactory to the student, they may then submit a written appeal to the Office of the Dean. If the student is not satisfied with the decision of the Dean, they may appeal to the Senate Review Board Academic (SRBA), if there are sufficient grounds for the appeal and if the matter falls within the jurisdiction of the SRBA. For information on academic appeals consult your Academic Advisor or see the Student Academic Appeals – Undergraduate in the Academic Calendar

https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_14.

Note that final course marks are not official until the Academic Dean has reviewed and signed the final grade report for the course. If course marks deviate from acceptable and appropriate standards, the Academic Dean may require grades to be adjusted to align them with accepted grading practices.

6. PREREQUISITES

Unless you have either the prerequisites for a course or written Special Permission from the Dean to enroll in it, you will be removed from the course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisite(s).

7. SUPPORT

Support Services

The Brescia University College Registrar's website, with a link to Academic Advisors, is at <http://brescia.uwo.ca/academics/registrar-services/>. Students can access supports through Brescia's

Student Life Centre (<http://brescia.uwo.ca/life/student-life/>) and Learning Development & Success at Western (<https://www.uwo.ca/sdc/learning/>).

Mental Health and Wellness

Students may experience a range of issues that can cause barriers to your learning, such as increased anxiety, feeling overwhelmed, feeling down or lost, difficulty concentrating and/or lack of motivation. Services are available to assist you with addressing these and other concerns you may be experiencing. You can obtain information about how to obtain help for yourself or others through **Health & Wellness at Brescia**, https://brescia.uwo.ca/student_life/health_and_wellness/index.php and **Health and Wellness at Western**, http://uwo.ca/health/mental_wellbeing/index.html.

Sexual Violence

All members of the Brescia University College community have a right to work and study in an environment that is free from any form of sexual violence. Brescia University College recognizes that the prevention of, and response to, Sexual Violence is of particular importance in the university environment. Sexual Violence is strictly prohibited and unacceptable and will not be tolerated. Brescia is committed to preventing Sexual Violence and creating a safe space for anyone in the Brescia community who has experienced Sexual Violence.

If you or someone you know has experienced any form of Sexual Violence, you may access resources at https://brescia.uwo.ca/safe_campus/sexual_violence/index.php.

Portions of this document were taken from the Academic Calendar, the Handbook of Academic and Scholarship Policy, and the Academic Handbook of Senate Regulations. This document is a summary of relevant regulations and does not supersede the academic policies and regulations of the Senate of the University of Western Ontario.
