

Wright College
Student Research and Creative Scholarship
Colloquium

Sponsored by the Honors Program



Spring 2025 Program

Wednesday, April 23 & Thursday, April 24
S-247 [Science Building]

Wednesday, April 23 Schedule

11:00 – 11:05 a.m. Welcome

11:05 a.m. - 11:15 a.m. Juche, Sanctions, and System Failure: Investigating the Political Economy of North Korea

Political Science 201

North Korea presents a distinctive case of economic failure among authoritarian regimes. This project explores why it has resisted market-oriented reforms adopted by other authoritarian states, despite prolonged stagnation. This study analyzes policy decisions, ideological doctrine, and comparative frameworks to demonstrate how the Kim family regime has emphasized absolute control in lieu of adaptation. It further examines the rise of the informal markets, *jangmadang*, as a grassroots response to systemic collapse. The findings suggest that economic dysfunction in North Korea is not merely the result of external sanctions, but the outcome of internal structures designed to preserve regime power at the expense of stability and statewide prosperity.

***Presenter:* Jansa L. Hulett**

***Faculty Sponsor:* Professor Merry Mayer**

11:15 a.m. - 12:30 p.m. Human Rights Conditions in North Korea

Political Science 299-Interdisciplinary Study [Diplomacy Lab]

In this Diplomacy Lab project, students have been asked by the U.S. Department of State to examine the deplorable human rights conditions of citizens of North Korea, and using stories from defectors to develop creative methods for increasing awareness of their terrible plight and the many challenges they face in escaping through China. Students' work will include cartoons, a digital museum exhibit and possibly an audio podcast.

***Presenters:* Fiona Clark, Agueda Estrada, Siatta Fayia, Jennifer Figueroa, Graci Komperda, Andriy Valnyuk**

***Faculty Sponsor:* Professor Merry Mayer**

12:30 p.m. - 12:45 p.m. Omega-3 Oxidation: Capsules vs. Bottles

Center of Excellence for Engineering and Computer Science

Omega-3 fatty acids (FAs) are essential polyunsaturated FAs known for their anti-inflammatory and anti-aging properties. However, their polyunsaturation makes them prone to oxidation, which reduces their effectiveness and stability, resulting in harmful by-products. This study examines the oxidation rates of encapsulated versus bottled liquid Omega-3 supplements. We hypothesize that encapsulated Omega-3 will oxidize slower due to less air exposure. To test our hypothesis, we measured the primary oxidation of both forms at 0, 4, 8, and 16 weeks of exposure to air. Contrary to our hypothesis, the peroxide value of encapsulated Omega-3 showed a 20-fold increase (20.42 ± 3.2) compared to bottled Omega-3 (9.11 ± 1.07). In the future, we will analyze secondary oxidation products with Infrared spectroscopy, validate peroxide values, and assess the effect of

temperature (4°C vs. room temperature) on oxidation. This study's outcome may help consumers maximize Omega-3 benefits while minimizing oxidation risks.

Presenters: Kudaiberdy Ibrash, Armando Roman, Orion Aguirre, David Rohan Kato
Faculty Sponsor: Dr. Doris J. Espiritu

12:45 p.m. - 1:00 p.m. Health of the Chicago River: Investigating 22 Years of Factors Affecting Eutrophication

Center of Excellence for Engineering and Computer Science

Eutrophication is a process that occurs when a waterbody becomes oversaturated with nutrients through urban, industrial, and agricultural runoff consequently causing hypoxia (oxygen deficiency). This research focuses on studying the eutrophication of the Chicago River. We hypothesize that an increase in nutrients such as nitrates and phosphates, paired with higher temperatures and lower precipitation, leads to higher levels of eutrophication. Using data mining techniques, we investigated twenty-two years (2002 - 2024) of public data: nutrient, atmospheric, and chlorophyll-a from the MWRD, myNASA, and NOAA at six geographically correlated sites along the river. Our results show that increased eutrophication directly correlates to elevated nitrates, phosphates, and water temperature and is inversely correlated with precipitation in the river. Future studies can explore the correlation between climate change and additional factors affecting the health of the Chicago River to design interventions that could potentially restore a healthy water ecosystem.

Presenters: Amara Moreno, Minna Jutton, Isabel Arias, Antonio Delgado, Erika Sarmiento
Faculty Sponsor: Dr. Doris J. Espiritu

1:00 p.m. - 1:15 p.m. Optimizing Mentor-Mentee Matching: A Research-Based Application for Establishing Impactful Mentoring Relationships

Center of Excellence for Engineering and Computer Science

Mentoring is crucial for career development, benefiting mentees and mentors. However, establishing an effective mentorship connection can be challenging. This research develops an application designed to optimize mentor-mentee matching for sustained engagement and productive relationships. We hypothesize that personality type, demographics, career, and interests impact ideal mentorship. Using these dimensions, we developed an algorithm to calculate a mentor-mentee matching percentage and then tested it using a real-world mentoring experience. We then compared the app's matching results with actual near-peer mentoring outcomes. One hundred thirty-two (132) participants signed up as either a mentor, mentee, or both, and sixty-four (64) pairs went through two months of guided mentoring. Post-experience surveys showed that the algorithm's matching percentages were within $\pm 10\%$ of actual mentoring outcomes. Building on these findings, we will further optimize the algorithm and test the application, with the goal of deploying an improved version that reduces the discrepancy to $\pm 5\%$.

Presenters: Alessandra Romero, KitMan Chan, Ronan Agsalud, Elizabeth Luviano, Barbaros Zorlu
Faculty Sponsor: Dr. Doris J. Espiritu

1:15 p.m. - 1:30 p.m. The Realization of Kinematic Mounts VPICs

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The need for faster data transmission is increasing as technology advances. Light based transmission devices offer a potential route to improve data transmission. Current light based transmission devices are two dimensional. Volumetric Photonic Integrated Circuits (VPICs), are a 3D improvement to the existing 2D interfaces that offer a more compact design that enhances speed, efficiency and accuracy. Advancements in integrated circuits will require integrating photonics components through different fabrication techniques like Subsurface Controllable Refractive Index via Beam Exposure (SCRIBE). The main focus of our study is to design a kinematic mount that restricts six degrees of spatial freedom to align and lock VPICs using the SCRIBE technique for efficient mass production. We have successfully designed a prototype that is able to align with its inverse counterpart and lock into place. Aligning two VPICs allows the full realization of 3D photonic circuits.

Presenters: Owen Funke, Erum Khan, Adedamola Ajiboye, Osvaldo Alfaro, Jade Ocampo, Elias Fabian.

Faculty Sponsor: Dr. Doris J. Espiritu

1:30 p.m. – 1:45 p.m. Case Study of Factors Affecting Reverse-Transfer Students' Degree Completion

Center of Excellence in Engineering and Computer Science

Across the U.S., 1.9 million students dropped out of college, and 250,000 reverse transferred over a two-year span. The causes of reverse transfer students (those who first attended 4-year institutions, and before obtaining a degree transferred to community college) aren't well-defined. However, they are often personal and unrelated to academics. Our research aims to identify the factors for reverse transfer and increase bachelor's degree attainment among this population. We hypothesize that reverse transfer students engaged in a community of practice will experience an increased sense of belonging and higher levels of self-efficacy. Our preliminary data includes interviews with students in the Engineering Pathways Program at Wright College. Thus far, our data demonstrates that sense of belonging, and academic support are crucial for students' success. Our future work will implement a mixed methods approach, including the addition of a survey, and expansion of the case study interviews to non-engineering students.

Presenters: Ivan Trejo, Angel Flores, Mohammed Alabaddi, Cesar Toledano.

Faculty Sponsor: Dr. Doris J. Espiritu

2:00 p.m. - 2:15 p.m. Non-Traditional Students Pathway to Engineering

Center of Excellence for Engineering and Computer Science

According to the National Science Foundation, STEM jobs are projected to grow by 6.9% by 2032, yet there remains a shortage of professionals with bachelor's degrees in STEM. Non-traditional students, especially GED students are less likely to go into the STEM-field due to limited resources. Even if GED earners pass the math section, they often require up to four more semesters before reaching Calculus. This study proposes a transitional bridge program that integrates Pre-Calculus concepts into GED coursework, enhancing math readiness and increasing STEM enrollment. In partnership with the Adult Education Director, we will implement

informational STEM-workshops and guide students through placement via TABE and ALEKS. Based on scores, students will be placed into tailored math pathways and re-tested with ALEKS post-program. Pre- and post-surveys will track changes in STEM interest. We aim to better prepare GED students for college-level STEM, reducing time to degree and increasing participation in STEM-careers.

Presenters: Lourdes Johnson, Thomas Nee, Elias Khenano, Gabriel Dennis.

Faculty Sponsor: Doris J. Espiritu

2:20 p.m. - 2:40 p.m. The Effect of Alumni Stories of Success in Motivating Wilbur Wright College Students to Succeed Despite Academic Barriers

Phi Theta Kappa, Theta Omega Chapter

The Theta Omega Chapter of Phi Theta Kappa completed a research project focused on a common problem we noticed on campus; a lack of motivation to excel academically. We conducted research on different forms of motivation, common barriers to education, and colleges that have used alumni stories successfully. From this research, we designed a survey measuring whether alumni stories could motivate students to persist through common barriers. The survey indicated that students were motivated by and related to alumni. Our findings demonstrate that Wright college students greatly benefit from alumni success stories. The positive influence of alumni drives us to increase alumni presence at Wright College in the future.

Presenters: Alondra Castillo, Aya Bareket, Valerie Dutan Molina, Yvette Hernandez

Faculty Sponsor: Kathleen Ordinaro and Mary Kincaid

Thursday, April 24 Schedule

11:00 a.m. – 11:10 a.m. Shared Memories, Divided Presents: Borders, Identity, and the Fractured Self

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

When borders disappear or become inaccessible, people lose the reference points to help them understand who they are. Wars in the Slavic regions moved borders and even erased nations. Along those borders, regions where multilingual communities existed broke apart and the people of these regions became unsure of which “side” they belonged to. *Sarajevo Marlboro* serves as a book of short, fragmented stories of fractured identities that prove the alienation of culture and identities due to the shift and collapse of borders and nations. Themes such as trauma, displacement, memory loss, and the search for belonging are present in *Sarajevo Marlboro* as well as other Slavic novels such as Kundera’s *Ignorance*, Mikanin’s *Escape Hatch*, and Tokarczuk’s *House of Day, House of Night*. These texts prove how displacement redefines one’s identity and forces a path to struggle in the search of belonging in a world where they no longer fit.

Presenter: Paula Rueda

Faculty sponsor: Professor Natasha Todorovich

11:10 a.m. - 11:20 a.m. The Perpetual Boulder and the Return to Nowhere: Sisyphus in Postmodern Slavic Literature

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

The Perpetual Rolling Boulder to the Return of Nowhere: Postmodern Slavic Literature delves into how Milan Kundera's *Ignorance* characters along with Vladimir Makanin's *Escape Hatch* and Milorad Pavić's *The Inner Side of the Wind* protagonists represent Sisyphus's existential plight. These protagonists endure cycles of exile and illusion amid identity crises while searching for a homeland or reality which has vanished. In this analysis of postmodern Slavic literature, we discover how the search for meaning becomes an act of perseverance by examining the philosophies of Camus' absurdism, Plato's cave and Odysseus' eternal journey. Resolutions remain unattainable through Irena and Josef's psychological exile in *Ignorance*, the *Escape Hatch* characters' choice of illusion over truth, and the mythic disconnect found in *The Inner Side of the Wind*. Despite their fruitless efforts reminiscent of Sisyphus' eternal struggle, the characters continue to push their symbolic stones to a nonexistent destination.

Presenter: Isaac Espadas

Faculty sponsor: Professor Natasha Todorovich

11:20 a.m. – 11:30 a.m. What is the Concept of Identity?

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

This presentation will discuss a toll of struggling to find yourself and how alienation can affect you emotionally and physically. Many factors can cause alienation in the mental and physical body. That causes depression, self-isolation, and even self-harm. Something specific can be nostalgia, missing your old self and how you used to be, and hating what you have become. This theme was seen through the books we read this semester: *Escape Hatch* by Vladimir Makanin, *Ignorance* by Milan Kundera, *The House of Day, The House of Night* by Olga Tokarczuk, and *The Inner Side of the Wind* by Milorad Pavić.

Presenter: Katherine Pichardo

Faculty sponsor: Professor Natasha Todorovich

11:30 a.m. - 11:40 a.m. Exile and the Ignorance of Those Who Stay

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

This presentation will explore the theme of exile and the ignorance of those who stay in Milan Kundera's novel *Ignorance*. The novel follows two Czech "exiles", Irena and Josef, who return to their homeland years after fleeing the Soviet invasion. As they attempt to reconnect with their past and with themselves, they realize that both the country and the people they left behind have changed, or perhaps, they have. The project will examine how displacement creates emotional and psychological distances that time and memory cannot easily bridge, highlighting the misunderstanding between those who left their homeland and those who stayed and showing how each side constructs a different reality shaped by absence and change.

Presenter: Ana Sofia Saenz Laverde

Faculty sponsor: Professor Natasha Todorovich

11:40 a.m. - 11:50 a.m. Klyucharyov as the Modern Prometheus in Russian Literature

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

This presentation explores the tale of Prometheus and how it is symbolically dominant in the world of literature and art. In Vladimir Makanin's novella *Escape Hatch*, the character Klyucharyov seems to take on a Promethean figure as a way of illustrating underlying messages relevant to the Russian community. Makanin's intention with taking a Promethean approach in his work is directly linked with analyzing the implications of Russia's political and social landscape during its Communist era.

Presenter: Naina Mukanbetova

Faculty sponsor: Professor Natasha Todorovich

Break 12:00 p.m. – 12:30 p.m.

12:30 p.m. - 12:40 p.m. Fragmented and Redefined Identity

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

This presentation explores how identity is shaped, fragmented, and redefined in *Ignorance* by Milan Kundera, *Escape Hatch* by Vladimir Makanin, *House of Day*, *House of Night* by Olga Tokarczuk, and *The Inner Side of the Wind* by Milorad Pavić. Through a comparative analysis, I examine how the characters in each novel struggle with belonging, memory, and personal transformation—often in ways that echo Ancient Greek archetypes. While Kundera and Makanin depict identity as fractured by exile and isolation, Tokarczuk and Pavić reimagine identity through mysticism, myth, and nonlinear storytelling. Key insights reveal that identity in these Slavic works is fluid and often haunted by history, space, and shifting perceptions of time. The presentation also highlights how storytelling becomes a tool for self-understanding, offering multiple paths to reclaiming or reshaping one's sense of self.

Presenter: Sherrod Perry and Jose Guadarrama

Faculty sponsor: Professor Natasha Todorovich

12:40 p.m. - 12:50 p.m. Crossing Borders: Metaphorical Journeys and the Fluidity of Reality

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

This project explores how reality is portrayed not as a fixed constant, but as an ever-evolving construct shaped by memory, perception, and time in *House of Day*, *House of Night*, *Ignorance*, *The Inner Side of the Wind*, and *Escape Hatch*. Each work features characters undertaking metaphorical and literal journeys through space, time, identity, or consciousness. Those journeys test or blur the boundaries between past, present, and future. The borders serve as metaphors for deeper struggles with belonging, identity, exile, love, and the search for meaning. These metaphors assist in dissecting the use of temporal, cultural, personal, or existential themes. While each novel explores these boundaries differently such as the mystical and cyclical time of Tokarczuk's world to the fractured memory and political dislocation in Kundera, the collective narrative arc suggests that by

either rejecting, embracing, or breaking the boundaries between times and selves, the characters reflect the core truth that reality is a dynamic, shifting experience, never to be exactly the same again.

Presenter: Jennifer Soto

Faculty sponsor: Professor Natasha Todorovich

12:50 p.m. - 1:00 p.m. Nostalgia, Exile, and the Illusion of Return in Kundera's *Ignorance*

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

In this presentation, I explore the themes of nostalgia, exile, and the idea of returning home in Milan Kundera's *Ignorance*. The novel follows two exiles who come back to their homeland after years away, only to realize that what they were searching for doesn't exist anymore or maybe never did. Through their stories, Kundera shows how memory can distort the past, and how the idea of "home" can be more of a feeling than a place. My analysis looks at how forgetting, rather than remembering, sometimes offers peace, and how nostalgia can create false expectations. This project highlights how *Ignorance* challenges us to think about what it really means to belong, and whether it's truly possible to return to the version of the past we hold onto in our minds.

Presenter: Abdallah Ahmad

Faculty sponsor: Professor Natasha Todorovich

1:00 p.m. - 1:10 p.m. Surface vs. Underground

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

This presentation will discuss the novella *Escape Hatch* written by Vladimir Makanin and focus on the analysis of the opposition of the surface and the underground worlds. The dark, surface world is the place where no one is safe where the underground world is bright, safe space.

Presenter: Matthew Cabagnet

Faculty sponsor: Professor Natasha Todorovich

1:10 p.m. - 1:20 p.m. Memory and Forgetting

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

The project will discuss the theme of memory and forgotten from the novel *Ignorance* written by Milan Kundera, novella *Escape Hatch* written by Vladimir Manakin, and the novel *House of Day, House of Night* written by Olga Tokarczuk. The project will analyze how memories can shape identity but also how personal and collective memories shape perception. The project will also discuss the change of a person's perspective of reality when it comes to forgetting.

Presenter: Mauricio Sandoval

Faculty sponsor: Professor Natasha Todorovich

1:20 p.m. - 1:30 p.m. Trapped Like Pawns: A Game of Fate vs. Free Will

English 102 Honors: Slavic Lit in the late 20th Century: Becoming Postmodern

The project addresses the tension between fate and free will presented in Milorad Pavic's *The Inner Side of the Wind*, Olga Tokarczuk's *House of Day, House of Night*, Vladimir Makanin's *Escape Hatch*, and Milan Kundera's *Ignorance*. These novels invite consideration of how characters operate at the edge of choice, amidst fragmented worlds constructed by history, political trauma, and myth. The analysis closely considers the characters' attempts to make meaning around identity in spaces of limitation and possibility. By comparing the philosophical notions of free will and determinism, the project reveals how the narratives interrogate the illusion of freedom in identity construction and consider forces outside of the individual to shape identity. Ultimately, the project aims to understand whether there can be a personal agency in a negotiated, predetermined reality.

Presenters: Ivette Gutierrez

Faculty sponsor: Professor Natasha Todorovich

1:30 p.m. - 1:40 p.m. Fostering STEM Identity and STEM Efficacy Through Engagement in Community Service

Center of Excellence for Engineering and Computer Science

Students pursuing STEM degrees withdraw at a concerning rate. STEM identity (the ability to see oneself as a STEM professional) and STEM efficacy (the belief in one's ability to succeed in STEM) can predict success in STEM careers. We hypothesize that students who engage in STEM-related service activities (SRSA) increase their STEM identity and STEM efficacy and that the increase is proportional to the service length. We designed short-term (an hour to a day), medium-term (up to 2 weeks), and long-term (2 weeks to months) SRSA and measured STEM identity and STEM efficacy using Likert scale pre- and post-surveys. The results from 189 respondents exhibit a significant ($p \leq 0.05$) increase in STEM identity for medium-term (4.36 to 4.55) and STEM efficacy for short-term (3.91 to 4.08) and long-term service lengths (4.08 to 4.58). Future works will include additional participants to maximize accuracy.

Presenters: James Haller, Fatimah Musa, JoeMargaret Claudio, and Jimmy Peralta

Faculty sponsor: Dr. Doris J. Espiritu

Thank you to the presenters and faculty sponsors!

