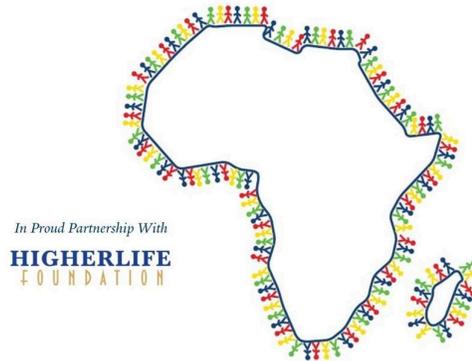


Yale Young African Scholars



Seminar Descriptions Blue Book

Seminar 1 Options

CU_1 Revolutions in Art: Changing Perspective and Creating Culture

Why go to the museum when you can spend two hours enjoying a movie at home? Why would an Abu Dhabi prince spend \$450.3 million on the “Salvator Mundi” painting by Leonardo Da Vinci? In this seminar, we will review the deviation from Renaissance standards of art in Western Culture by looking at the works of selected modern art painters such as Van Gogh and Kandinsky. We will look at the implications of such standards in valorizing African art on global grounds and what this means for artists in general. We will also briefly talk about the movements of Realism, Impressionism and Abstraction and, most importantly, we will talk about the connection and implication that these revolutions in Western art may have in Africa. What is the narrative of African Art? How can we give more value to our local artists and what is the role of culture in expressing the present and shaping the future? Let's discuss!

BA_1 Empathy: Is it really helpful?

Empathy, the act of feeling other's pain as if it was your own, has been part of the human experience since the first days of earliest society. Empathetic people contribute to the society in important ways, from donating to the needy to modeling thoughtfulness to others. But, is that the whole story regarding empathy? Are there any dark sides to feeling others' pain? In this seminar, we will discuss the meaning of empathy and how the human species has employed this skill throughout its existence. We will read and discuss three excerpts of literature by three different authors writing with different attitudes towards empathy. Real world examples will help us evaluate if the benefit of being more empathetic outweighs the cost, and students will debate supporting one view or another, plus discuss when empathy should and should not be employed.

SM_1 The Logic of Life: How (Not) to Think

Broadly, this seminar investigates behavioral biases and “rational” ways of thinking. You may think you know how someone would react in a particular situation, but fun scenarios will challenge your thinking! As you prepare yourselves to be the next leaders in your communities or around the world, it is important to understand why and how people make the choices they do. A better understanding of human behavior can help you make better-informed changes for society. Human action may at times seem irrational, but in this seminar, we will identify rational thinking in ‘irrational’ decision making. For instance, why would someone pay more money for the same chocolate bar that is cheaper in the store across the street? As part of this seminar, we will spend some time reflecting on the psychology of human behavior. This seminar includes group exercises, where teams will be assigned different scenarios. The groups will then get the chance to creatively act out one of these responses to the larger group! Finally, we will briefly consider how this seminar material ties in with development interventions in Africa.

NKA_1 Stem Cells: Endless Hope or Hopeless End?

Imagine one thing that could turn into absolutely anything else. Fantasy? Maybe not! Stem cells might be that adaptable. Their ability to change has many possible applications in healthcare (in treatment of cancers and genetic diseases, for instance), and in better understanding human anatomy and biology in general. But why are there reservations and concerns about research and use of stem cells? In this seminar, we will develop an understanding of stem cells, the differences between the types, where they can be obtained, developed and applied. We will also engage with arguments for and against stem cell use, relative to other existing modes of treatment, and debate whether or not they should be used in African contexts.

OT_1 The Internet of Things

In a future not so far away, objects of our daily lives will be endowed with the ability to sense and communicate. At that point in time, not only people but also inanimate objects will possess an identity on the internet initiating a new internet era: The Internet of Things (IoT). In fact, this internet revolution has already started with the advent of smart houses, wearable devices and body sensors! And experts believe that this revolution will profoundly change our daily life. Some of the problems that individuals and societies currently face will be easily solved, while new difficulties will arise. In this seminar, we will learn about the development of microelectromechanical systems (MEMS), data storage, communication technologies and software that enable the emergence of the Internet of Things. Equipped with a better grasp of the Internet of Things, we will then imagine potential solutions to current societal problems and try to anticipate new problems that the IoT will create.

LM_1 Searching for Earth's Twin

“The universe is a pretty big place. If it's just us, seems like an awful waste of space.” -- Carl Sagan Human beings are a very recent addition to the vast Universe and we occupy only a tiny corner of it. This makes us wonder if there is anything special about our Earth and our Solar System that has made it possible to breed the human species - a species which is unraveling the mysteries of the Universe. What is it that makes the Earth habitable? And can we find another

one? Should we only be looking for carbon-based rocky planets with water and atmosphere? Or should we broaden our definition of “habitability”? Should we be looking beyond our solar system? In this seminar, we will understand what it means for a planet to be in the “habitable zone” and why we need an atmosphere to protect ourselves from cosmic rays. We also will learn about the state-of-the-art technologies used by astrophysicists for exoplanet search. And at the end of it all, we will walk away with a renewed appreciation for the planet we call “home”.

SK_1 Linear Algebra: Matrices & Gaussian Elimination

Because of the ease with which linear equations (e.g. $x + y = z$) can be solved, they can be applied in many scientific fields such as economics, statistics, chemistry, coding theory and genetics to find general relationships between two or more things. Although the title of this seminar may at first appear intimidating, fear not! If you have ever come across one or more linear equations (sometimes called simultaneous equations) and tried to solve them, then you can think of linear algebra as just a generalized and more detailed way of solving those equations using matrices. This pure math seminar will introduce students to the very basics of linear algebra. We will come up with the definitions of what a system of linear equations is, what a matrix is, and learn how to perform basic operations of addition, subtraction and scalar multiplication on these matrices. Posing with the question of how to solve a general system of linear equations, we will learn to use basic operations on matrices as well as Gaussian Elimination to solve the systems.

RH_1 Jollof's Journey through our Cells

Jollof, ugali, couscous, gari, injera, fufu. Mmm. What happens to these delicious foods after we gulp down a bite? How does jollof make its way into our tiny cells? How is food transformed to energy that we will soon use to stand up and scoop some more from the pot? Join me in the exploration of metabolism, where we will learn about the chemistry of carbohydrates and the mechanisms our body uses to break the delicious food mixture in our mouths to small energy units in our cells. We will also learn how metabolic diseases such as diabetes occur because of one small missing piece from these same "metabolic pathways" and how doctors use science to treat them. Videos that you will be required to watch prior to the seminar will take 15 minutes at most.

JP_1 Rap in a Global Context

Since its humble beginnings in 1970's South Bronx (New York City), rap has taken the world by storm, not only by influencing multiple genres of music such as pop, dancehall, and R&B, but also by affecting and connecting cultures across the globe: Kendrick Lamar in the United States, Keith Ape in South Korea, and Akhlou Brick in Senegal. At the same time, rap has been negatively criticized, namely for its often-overt chauvinism. By examining today's rap scenes in light of the historical context of rap music, we will discuss themes such as (but not limited to) the following: cultural appropriation; rap and feminism; rap as a political tool; rap as artistic expression.

MA_1 Politics in West Africa before the Transatlantic Slave Trade

You probably know about the Atlantic Slave Trade and the Middle Passage. Perhaps you are familiar with the slave narratives of the US--meaning you know that slaves picked cotton. Perhaps, you even know that most of the slaves bought in the Atlantic Slave trade were shipped to Brazil by Portuguese slave traders and that working on sugar plantations was their most common fate. But what do you know about the African regions and politics and people that these slaves came from? Probably very little. This seminar will focus on West Africa before the Atlantic slave trade. What was life like for the 17th century Pulli cattle herders of the Sierra Leone region, which was then still a politically decentralized region? How did slavery look in different kingdoms and other polities across West Africa? How was trade between Western and Northern Africa regulated and how did Islam affect trade and politics? There is a complex history of a diverse region full of different ethnic groups, languages, political arrangements, religions, trades, occupations, etc. to be known beyond the Atlantic Slave trade. Join me in learning more about this fascinating part of African history.

JF_1 Nationalist or Patriot? Should we love our countries?

Have you ever felt that odd feeling of pride when your country's team wins a football match, even though you've never really cared about the sport before? And what about those bracelets everyone wears that have pictures of their home country's flag on them? Why are they so popular? We tend to feel a strong allegiance to our countries, and most people never stop to ask why, but that's exactly what this seminar will do. In this course, will explore the concept of nationalism/patriotism, or the preference of one's own country over another. In class, we will break down the concept of the "nation" and talk about why these political units formed, and the kind of dynamic their presence creates and represents. In addition, we will have a debate about whether nationalism/patriotism is a good or a bad thing, and whether one can be both a true patriot and a responsible global citizen. I strongly encourage you to come to class with an open mind.

MM_1 Evaluating Electoral Integrity in Africa

Every few years, a country has elections to name either a president/ prime minister or members of parliament. Millions of people put their faith in the ballot box and hope for "free and fair" elections. And international observers are deployed to evaluate the freeness and fairness of an election. But does that evaluation work? This seminar will examine the standards used by local and international observers to certify whether a free and fair election has occurred, as well as measures that need to be put into place to ensure the integrity of an election is unquestioned. We will examine reports from elections held in Zimbabwe, Kenya and Gambia to assess what electoral reforms, if any, are necessary to ensure that free and fair elections occur.

SB_1 Homo Economicus

Humans are economic creatures. Economics as a subject does not apply only to banking, finance, and national budgets. It is closely tied to the practice of understanding human behavior. Making a decision about how to spend an afternoon involves weighing "opportunity costs." Sharing a pizza with friends involves the distribution of a "scarce resource." This seminar will provide an

introduction to key economic principles such as supply, and demand, opportunity costs, by relating these concepts to everyday life.

TS_1 Building Cities and Urban Planning in Africa

How do you create cities? How do you design an urban environment, including air, water, and the infrastructures of transportation, communication and distribution networks? How does this happen in Africa, specifically? Our discussion of urban planning in this class will incorporate social science, engineering and design. The technical aspects of urban planning include the application of scientific and technical processes in the planning for land use, space mapping, natural resources, transportation and infrastructure. At the same time, it needs to incorporate the social dimensions of people's lives in the country. Moreover, other considerations include the community's demographic, culture, geographic, and economic data. Urban planning also involves optimizing the effectiveness of people's land use and infrastructure. As you can imagine, building a city is extremely complicated and nuanced. Do you think you have what it takes to give it a try? Come find out in this class.

KR_1 Education and the Good Life

Education systems around the world have many goals: basic literacy, preparation for national examinations, teaching life skills, preparing students for university, training for specific professions, etc. As students with frequent pressure to improve grades, participate in extracurricular activities, and sacrifice time that could be spent sleeping or with family, how can we ensure we make the most of our educational experiences? In this seminar, we will examine the various objectives of a formal education, and question how they relate to our own happiness and well-being. Through discussion, we will examine the diverse realities of educational systems across Africa and the world. Using studies from the field of positive psychology as well as other literature on education, we will analyze how emphasis on different goals such as grades, national exam scores and skill development affect the happiness, well-being, and performance of students. Drawing upon personal experiences and various comparative research, we will try to find areas where educational institutions improve or reduce mental, physical and social well-being. Finally, we will apply these ideas about effective education into practical exercises, including considering how educational policies are designed. We hope to develop some strategies we can use individually to improve our own educational experiences, as well as determine what steps we can take to help educational systems better align with happiness and well-being of students.

Seminar 2 Options

RR_2 Negotiation and Team Building through Game Theory

In today's connected and globalized world, success is increasingly dependent on encounters involving trust, competition and managing uncertainty. Through interactive exercises, this seminar will introduce participants to some of the strategies in use during arbitration, negotiations, and everyday encounters involving cooperation (or lack thereof). More specifically, we will look into trade negotiations and models explaining why international cooperation on

climate change has proved so difficult. Game theory, which is the study of mathematical and behavioral models of such encounters, will be introduced through a brief overview of the concept and its implications for strategic interactions. Then this seminar will look into the mechanics behind optimal decision making and, by the end of the discussion, participants should be able to recognize and apply game theory principles to much broader contexts and in their own lives.

KR_2 Rhetoric & The Politics of Speech

Political speeches have the power to change opinions and votes, provoke wars or aid peace, challenge injustice or further oppression. Since ancient times, political leaders have consistently used the same critical rhetorical techniques to increase their persuasiveness and influence in public. In this seminar, we will examine some major rhetorical tools used to craft powerful political speech throughout history and analyze their effectiveness in different contexts. Using examples from recent events, we will deeply examine techniques that many leaders have used to leave a major impact on their audience. Throughout, we will examine theories of rhetoric and propaganda, drawing upon ideas from Ancient philosophers, like Aristotle, and contemporary commentators, like Professor Jason Stanley. Participants will be able to put these ideas into practice through exercises in speech writing and rhetorical construction that draw upon their own interests and passions.

MT_2 The Post-Modern Human and the Nature of Consciousness

We humans tend to think of ourselves as possessed of something that is uniquely ours as a species: an intangible thing we call The Self. It's what makes us...US, right? But does it? How? Are we sure? In this seminar, we will explore the obvious and yet somehow still obscure nature of selfhood. We will discuss questions about identity, free will, subjectivity, morality and the nature of consciousness. We also will delve into the concept of transhumanism and discuss what we think about whether it's a good thing that science and technologies are extending lives, enhancing human capabilities, and even creating new 'life' in the form of artificial intelligence. This seminar will be a great introduction to philosophical thinking in general, and to the sort of critical thinking that students do in a university-level humanities class.

EO_2 Breaking Biological Barriers

In this age of scientific breakthroughs, revolutions in biological research procedures have aided scientists in expanding human knowledge about life on Earth. In this seminar, we will examine a number of modern biological techniques used to study genetics, such as chromatin immunoprecipitation, and CRISP-Cas9. We will become familiar with how these techniques are being used today to study genetic phenomena, and with some of the discoveries that have been made possible with these techniques. Students will then use the tools that they learn to draft an experiment tackling an assigned genetic case study.

CU_2 Chemistry Inventions that Changed History

This seminar will cover a selection of chemical experiments that resulted in some of the major leaps in modern science and how the inventions that followed these experiments led to advances

in the treatment of diseases and revolutionized industrial processes. We will look at the discovery of penicillin and study its structural formula to understand its function. We will also look at the Haber-Bosch process and the reason why this experiment is accredited with the increase in the world's population from "1.6 billion people in 1900 to about 6.7 billion people today" (Steven Ritter, 2008). We will then use these experiments as a basis for understanding the importance that structure plays in the function of different chemical compounds. Finally, we will explore the role of chemical engineers themselves in these monumental breakthroughs. To apply what we learn, students will carry out a small experiment of how to scale up production by using recycled materials.

LM_2 How are galaxies formed?

Technological advancement leads to discoveries that cannot be explained by our current knowledge of the physical universe. We earthlings were in for a surprise in the 1920s, for example, when Edwin Hubble discovered an extragalactic universe through his newly minted telescope by realizing that Andromeda actually sits outside our galaxy. A similar shock awaited us in the 1970s, when Vera Rubin pointed her telescope at the Andromeda galaxy and saw signatures of invisible matter beyond the visible stars - leading to the discovery of dark matter. What is dark matter? Why do some galaxies have so much of it while others have none at all? And how do astronomers observe dark matter if it is "invisible"? We will try to answer some of these questions - but not all of them. (Scientists do not know the "right" answers yet - they only hope they are asking the "right" questions!) In this seminar, you will step into the shoes of an astrophysicist and work your way toward solving the mystery of dark matter and galaxy formation by asking questions and coming up with tools to answer them. We will look at images of different types of galaxies - big and small, faint and bright - and make educated guesses on how they might have been formed.

BA_2 Do you really need to sleep?

Have you ever wondered what happens to your body when you sleep? Or, how about what happens when you are up too late studying and you DON'T sleep? Join this seminar to learn about what is termed as 'sleep' in various organisms and what kind of processes are involved when you sleep. We'll develop an understanding of 'neural sleep' using various neuroscience data and look at how sleep impacts memory preservation. We'll also investigate how sleep deprivation affects metabolic, emotional and professional performance, plus discuss evidence showing that current technologies like smartphones intensify these effects. Come to this seminar if you're interested in learning about how an activity that seems so simple can have huge impacts on our body and mind. (And leave with an understanding of why "pulling an all-nighter" is not the right choice for your next exam prep session!)

OT_2 Autonomous Cars: How does a machine learn how to drive?

Popular in science-fiction books and movies, autonomous cars have long existed in our imaginations. However, in the last decade, they have driven out of the virtual world onto real streets and this is just one example of how artificial intelligence is starting to change our world. Helped by the development of efficient hardware and ingenious software, cars are learning how

to drive by applying the fundamental principles of machine learning. Today, the market of self-driving cars is emerging with high-tech companies competing to be the first to commercialize them. This seminar will first introduce you to the fundamental technologies of autonomous cars and present some of the advanced designs that can achieve nearly full autonomy. Then, we will introduce the basic ideas of neural networks and machine learning and illustrate typical learning tasks with examples. Finally, in an open discussion, we will envision various challenges that artificial intelligence will create and examine potential solutions.

RH_2 Saving Lives without Becoming a Doctor? Health Equity and Health Interventions

We often hear the statistics. Every single day, 21,000 children die before their fifth birthday of pneumonia, malaria, diarrhea and other diseases. An estimated 5,000 individuals worldwide become newly infected with HIV every day. Four hundred million people lack access to any type of health facility or service. What can YOU do to help? Becoming a medical professional is one way to directly contribute to improving people's health when they get sick, but why are people getting sick in the first place? Why are some people healthier than others? There are several non-biological reasons for sickness. For instance, people suffer from disease because of the poor conditions they live in and also because they are stigmatized or marginalized. How do we help them? Scientists, medical professionals, policy makers, and government leaders have to account for many non-biological differentiations when trying to eradicate diseases. We thus need a multi-layered approach to treating those whose health suffers and we will explore this multi-layered vision of health and the design of health interventions in this seminar.

JF_2 The United Nations and the African Union: Praises and Critiques

In this class, we will discuss two transnational bodies with importance for the African continent: The United Nations and the African Union. We will discuss the historical roots of each, and learn about the different bodies that compose them. In addition, we will learn about African countries' position within the AU and their relationships with the UN and with other member states, examining concepts such as bloc voting and negotiation. The class will be both descriptive, in which we simply learn about these institutions, and also critical in the sense that we will discuss critiques of these bodies and how they have affected the continent in a variety of ways.

MA_2 Sugar, Cotton, and Diamonds: Slavery across Africa and the Americas

This seminar is about slavery. More specifically, it is about the enslavement of African people. And even more specifically, it is about different forms of this slavery that existed across West Africa, the US, Brazil and South Africa in the 1800s. Did you know that the transatlantic slave trade is often considered the first system of globalization? Did you know that most slaves sold from the West African coast between the 16th and 19th century ended up on sugar plantations in Brazil? Or that Black South Africans were forced into migrant labor on the diamond and gold mines in Kimberly and Johannesburg in the 1800s? How about that the 17th century Muslim activist Nasir al-Din advocated for an end of internal slavery in the kingdoms of Senegambia while condoning the enslavement of non-Muslims from neighboring polities? Join this seminar to expand your knowledge about slavery and appreciate the different types of work, conditions

and fates of slaves in these four regions. We will try to understand the different effects on today's economies and cultures better by looking back to this important part of history.

LK_2 Powerful African Women of the Pre-colonial Era

They were mothers, daughters. They were queens, chiefs and important medicine women. They were warriors and homemakers. Kenya's Mekatilili wa Menza, Angola's Queen Nzinga Mbandi of Ndongo and many others were the powerful women that few talk of today. This seminar will be an in-depth discussion about the patriarchy in most African cultures and the women that defied it. In this class, we will discuss the role of women in pre-colonial Africa, focusing on the average woman vs. these powerful women who defied the social construct of what it meant to be a woman. In this age of superheroes created from people's imagination, all students will benefit from this learning about these very real, and very relatable African superSHEroes.

MM_2 "But it's my land!": Land redistribution in Africa

In February 2018, the South Africa government voted to take back white-owned land without compensation and redistribute it to black South Africans. The decision has sparked mixed and strong reactions. On one hand, over 80% of South Africa's land probably should not be owned by a small minority, and probably should be returned to its rightful original owners. On the other hand, land redistribution should be undertaken by means of a constitutionally supported process rather than fast-tracked in a way that incites violence. And the phenomenon isn't unique to only South Africa. This seminar will explore land redistribution in Zimbabwe, Kenya and South Africa to dissect the controversial issue of land redistribution, strategies used, pros and cons, and the role played by the international community. Together, we will assess how best this injustice stemming colonial days can be corrected in the 21st century.

SM_2 Religious Ethics and the Environment

Concerned about environmental sustainability? Join this seminar to learn how religious perspectives influence how people treat nature. This relationship between religion and the environment varies across religious traditions and changes over time, often informed by new scientific developments and by new ethical concerns (for instance, emerging anxieties about pollution, global warming, animal welfare, etc.). Religious traditions can and have been connected with ecologically destructive attitudes, just as they can be connected with environmentally sustainable practices. Religion can therefore be an important resource for developing better ethical relations with nature and animals. This seminar will explore the relationship between religious perspectives and interpretations of nature as they are presented in creation narratives (for instance, what is the proper relationship between human and animals?) and we will look at core ethical teachings of religions that may be relevant to ecology. We will explore these questions with a select group of religious traditions, including Christianity, Islam, and Jainism.

Seminar 3 Options

NKA_3 Wakanda: The #thisisafricattoo Movement

Western media has been criticized for its portrayal of Africa as full of bare landscapes of conflict and hunger, or otherwise full of wildlife, and allegedly even a single country. This has led many African youth to use their social media accounts to document the beautiful but ignored aspects of their natural and social environments, with hashtags such as #thisisafricattoo. Also notable is the current wave of Pan-Africanism as seen in fictional world of Wakanda in the Marvel hit Black Panther. In this seminar, we will explore the use and limitations of modern media in disrupting problematic narratives of our continent. We will engage with reservations on the balance between celebration of beauty and highlighting societal issues for broader social change, and whether the target audience is Western or larger global society, diasporans or continental Africans ourselves.

JP_3 How To Get Away With Lying: Linguistic and Philosophical Perspectives

What's in a lie? Is it as simple as "not telling the truth?" What if someone says what they believe is "right", but ends up being proved incorrect? Or if someone misleads another person, but still tells the truth? Are those instances of "lying" Figuring out what it means for humans to lie is hard work. Philosophers and legal scholars have been tackling the question for ages, and linguists have caught on, too, realizing the difficulties that lying poses to their theories of language and truth. In this seminar, we will join the struggle to take on difficult questions about lies and the truth, pulling from contemporary knowledge in linguistics and philosophy.

SB_3 The Philosopher and his Cave

What is philosophy? And what does a philosopher do? When did people first "philosophize"? Plato is widely regarded as the "first" philosopher. In the time of the Ancient Greeks, he wrote and thought about questions and problems that we still think about today. Questions like: What is justice? Who should lead? How should we organize societies? Plato's 'Allegory of the Cave' is one of the most widely referenced and most commonly known philosophical stories. It is a text that addresses the complicated nature of illusions, enlightenment, and learning. This seminar will be an introduction to philosophy, through the example of Plato's cave, and a conversation about how we might think...about thinking.

LK_3 The Art of Small Talk and Making 'Elevator Pitches'

Effective communication is what separates humans from the rest of the animal kingdom. But it's not easy for all of us. How do you turn a complete stranger into someone you can talk comfortably with? Or even into a new friend? And how do you sell yourself to a potential employer/partner in order to significantly increase your chances for success? How do you navigate and smooth over socially awkward situations? Come and learn effective small-talk skills to help you develop meaningful personal and professional relationships in a short amount of time. Think you're already an expert at the "art of chat"? Come anyway and find out how to sell

yourself and your skills in one minute or less. You never know when you might have the chance to pitch your dream project to someone before she or he gets off that elevator!

EO_3 More Isn't Always Better: Eutrophication and the Importance of Keeping our Waters Cleaning

Eutrophication is defined as the uncontrolled increase in plant growth, lowering of oxygen concentration, and decline of fish populations that results as an increase in the level of chemical nutrients in an ecosystem. This chemical increase leads to algal bloom, which becomes a real problem once the algae die. Aerobic bacteria use up the oxygen in the water consuming the dead algae, causing oxygen levels to fall below that necessary for fish life. And once the aerobic bacteria begin to die, anaerobic bacteria take their place, but these creatures leave behind foul-smelling products and toxins that ultimately rule out use of the lake for local communities, and also threaten nearby bird and mammal life as well. In this seminar, students will investigate the specific effects that human activities, such as the use of fertilizers on farmland and the release of sewage into rivers, have on creating eutrophic lake environments. We also will brainstorm ideas for combatting and preventing the issue in our communities.

SK_3 Impacts with Space Objects

The earth is fragile, especially when it comes to the way that humans interact with it. But the earth is not only endangered by the existence of people. It also faces severe destruction from volcanoes, earthquakes, hurricanes, and the like. A less commonly-known form of destruction the earth encounters is impact with space objects. This seminar seeks to introduce students to the basics of space objects. We will learn to define and differentiate between space objects such as asteroids, comets, meteors, meteorites, and meteoroids as well as explore the formation of these bodies. What are the actual chances of earth colliding with a space object? Have you ever wondered what the consequences of such a collision may be? Would it be possible to prevent these collisions, or at least to predict them? The seminar will explore the consequences of potential clashes with space objects, the chances of the collisions indeed occurring, and whether or not there are ways to avoid such impacts. We will look at real-life examples and effects of earth's collisions with space objects from as far back as 65 million years ago to some as recent as 5 years ago.

BA_3 Biomimetics: Tailoring nature's perfection to our own needs

Have you ever wondered how we learned to adapt the perfection seen in nature and incorporate it into our daily human lives? For example, how did we come to use the shape of a bird's beak to make one of the fastest trains ever known to man? Or how we have used the mounds that termites construct to build buildings with stronger internal structures? This seminar will introduce you to a relatively new and very interesting area of study known as biomimicry or biomimetics. "Biomimetics is an approach to innovation that seeks sustainable solutions to human challenges by emulating nature's time-tested patterns and strategies," according to The Biomimicry Institute. This exciting new field lets us apply nature's mechanisms to improve our interaction with fields such as energy, agriculture, architecture, medicine, communication, and more. Come explore what nature has in store for our future!

OT_3 The challenges of Mars colonization

In science-fiction movies, Martians are portrayed as invaders coming from an unknown, hostile and dangerous environment: planet Mars. In these fictions, Mars is the home of an enemy that threatens the survival of the human race. However, this negative perception has changed recently as scientists now consider whether Mars is a potential habitat for human life. With climates changing at an alarming rate and the possibility that weapons of mass-destruction may annihilate a considerable portion of the world's ecosystems, visionaries have proposed that Mars could be a Plan B for humanity. The million-dollar question is: when will this Plan B be ready? When will we be able to live and reproduce on the Red Planet? This seminar will first introduce you to the history of our encounter with Mars and the information that we have so far collected about its atmosphere, surface, soil composition and climate. Then, we will identify major obstacles that will be encountered on our mission to colonize Mars. Then, for each of the problems identified, we will explore some of the solutions that have been proposed and imagine some of our own as well.

CU_3 Harnessing Renewable Energy: A Path to Development and Sustainable Growth

Climate change is arguably one of the most pressing problem of the 21st century. As the pressure on our ecosystem heightens, we must find new ways of mitigating humans' negative impact on the planet. This seminar will explore how renewable energy can play a role in sustaining stronger economies in Africa for countries whose major revenues are currently dependent on oil. We will introduce and define the term "Dutch Disease," and look at how investing in renewable energy can foster more diversified economic systems. We will then quantitatively assess the impact of renewable energy using available data and how it has led to the creation of opportunities for business and employment for rural communities in Sub-Saharan Africa. Finally, we will look briefly at the cost of renewable energy, asking ourselves 'if it so good, why is it not yet wide-spread?' We will explore the factors hindering the use of renewable energy and how to eliminate them.

RH_3 Social Entrepreneurship: Harnessing the "power of markets" to help the poorest 3 billion

Today, many are suffering in poverty with the lack of quality of housing, health services, good education and employment opportunities; and for reasons ranging from colonialism, conflict, lack of state-building, and poor leadership. Over 3 billion today live on less than \$2 a day and this group is commonly referred to as the Bottom of the [wealth] Pyramid (BoP). There is a great need for international economic and community development. International, or foreign, aid has been flowing from wealthier countries into developing ones for decades, However, doubts about the efficiency of this poverty relief system have been raised on countless occasions. Another approach to development and, arguably, a more sustainable one, is "social entrepreneurship." Social entrepreneurship can transform this need for development into the demand for and provision of services by the people who face the challenges of under-development themselves. This seminar would focus on understanding social enterprises and all the moving parts of these organizations - their business model. With it in mind, we will learn about the challenges these organizations face, the people they serve, and their contribution – or lack thereof - to regional

development. As points of reference, we familiarize ourselves with an educational enterprise in Kenya (Bridge International Academies) and a health enterprise in India (Embrace).

MA_3 21st Century African “Culture”

You all had to reflect on what it means to be an African in the 21st century as you applied to YYAS. Think back to what you wrote about in your essay. Were you proud of Africa’s strength and resilience? Or perhaps you recognized all the ways that African countries are being exploited today, just as in the 20th century? Maybe your thoughts went straight to “African Print”? Or to the diversity of language, food, and people on the continent? Did you think about “African culture”? Do you feel that it is in decline? And is there such a thing as an “African culture” or possible for it to decline? In this seminar, we will collectively attempt to define culture and specifically African culture. We will engage with perceptions about African culture as well as our own biases and understandings of African culture. We will discuss concepts like modernization and westernization in the context of “African” culture and challenge the idea that changes in the 21st century to customs/behaviors necessarily point to a so-called “decline” of African culture.

MT_3 Tribalism in Contemporary African Societies

Every single participant at YYAS has either benefited from or been the victim of tribalism in some form or another. In fact, every person in the world can say the same, whether due to their ethnic group, political party, or whichever football club they support (or don't)! Our tendency to form groups and reject those who fall outside the group – even to the point of violence and genocide – is something that occurs globally. But is that because the urge to form tribes is in our basic human nature? Has evolution bred tribalism right into our genes? Or is this behavior the result of historical and current social structures? And, in either case, should tribalism be eradicated? Can it be eradicated? This seminar will ask whether tribalism in the African context will always, inevitably result in genocide, or if there is a way for different tribes to exist in permanent peace. Students will be asked to reflect upon and examine their own experiences of being inside or outside the tribe (any ‘tribe’), and to critically analyze the history of genocide to argue either for or against the eradication of tribalism in their communities. Through doing so, students will become more conscious about identity and tribalism and how these concepts impact daily life for themselves as well as others.

TS_3 African Feminism: Re-Imagined and Decolonized

Are you a feminist? Why, or why not? What does this word mean to you as a young African? Although the term “feminism” is imported, the concept of opposing the oppression of women is not foreign to the continent. Africa has some of the oldest civilizations in the world, and each of these had women who found different ways to oppose discrimination against women. Like all feminisms, modern day African feminism is about challenging male dominance. More than that, however, it also resists oppression based on ethnicity, class, tradition, globalization and other challenges specific to the continent. In this class, we will do two major things. First, we will explore what African feminism really entails and the different types that exist. Secondly, we will discuss the activism and works of some renowned African feminists. We will talk about how they specifically address the conditions and needs of women in their countries. Come to this class ready to challenge the Western roots and tools of feminism. P.S: yes, men can be feminists too!

SM_3 Cultural Heritage Preservation and Management

This seminar will explore the concept of cultural heritage: those objects, places, rituals, songs, and other traditions that are important to you. Why do we pass down objects from (grand) parent to child? Why do we continue to perform rituals that are hundreds (or thousands!) of years old? And why should we care about keeping this heritage for future generations? In this seminar, we will explore cultural heritage in its many forms and discuss how and why we should preserve it. We will also consider examples of heritage destruction, such as the recent conviction of Ahmad al-Faqi al-Mahdi for destroying mausoleums in Timbuktu in 2012. Together, we will explore why heritage protection is crucial for community development and what role it plays in identity formation and nation-building. We will reflect on some of the obstacles in protecting this heritage, such as conflict, neglect, and natural disasters. Finally, we will discuss some of the ethical and moral implications of heritage preservation.

Seminar 4 Options

TS_4 The Science of Persuasion: 10 Steps to Getting What You Want

How do you persuade someone? What makes some people more successful than others in the art of persuasion? What tools can you use to make your case next time? In this class, we will try to answer these questions and more. We all have the power to capture the public's attention, influence the undecided, and motivate people to be active. Nonetheless, it seems that some people are more 'gifted' at this than others. This class will introduce you to 10 key tools that you can use to persuade a person or an audience. We will then practice implementing these tools to see how they can be applied in different settings and circumstances. Come and find out the 10 steps to getting what you want!

NKA_4 The Science Behind Water

Most of the world is covered with water, sure, but even in landlocked areas water is everywhere around us. We drink it, food depends on it, our industries depend on it; a society without water is unimaginable. So, what's the science behind water, beyond its well-known nickname H₂O? In this seminar, we will engage with what the insights of biology, chemistry, physics (and mathematics) tell us about water. We will explore topics such as hydrogen bonding, floating, osmosis, rainfall and common water reactions. We will also play around with one or two experiments that can easily be recreated to demonstrate those phenomena. The relationship between the natural and social sciences will also be highlighted as we will understand how the above processes are linked to political issues such as water pollution and water scarcity.

KR_4 Sports & Philosophy

In the world of competitive sports, athletes are always trying to find an edge. Some play dirty with the rules, some take performance enhancing drugs, and some find ways to injure others in pursuit of glory. Loyal fans of local and national teams often provoke or encourage this behavior,

while governing bodies of sport struggle to maintain an even playing field. The realm of global sports raises many fascinating examples and case-studies for how we view ethical behavior. Using examples from philosopher David Papineau's *Knowing the Score*, this seminar will examine what sports can teach us about the world of philosophy and ethics. Using examples from football, rugby, cricket, basketball and other sports, we will discuss cases in which ethical decisions played a critical role in the outcomes of matches. Consider for example, the expectation, but not rule, that in a game of football, upon a serious injury, the player with the ball kicks it out-of-bounds in order to allow for medical help. What should we think if the player decides to run and score on the opponent during an injury panic? Despite the complicated ethics of fair play, sport can also be a tool for peace, political unity, and can transcend differences in language and culture. We will end with a peek into the social and political implications of sport in the modern world. Athletes and spectators alike are encouraged to bring their own examples and critical thinking to the discussion.

MT_4 Blink and the World may disappear: An Introduction to Existentialism

Is what we see and hear really there? How do we now? What if we are the products of another being's imagination? What if we're dreaming? Close your eyes. How do you KNOW that everything is still out there? While you blink, the world may disappear. These questions make up some of the foundation for Existentialist thinking. In this seminar, we will explore our uniquely human tendency to search for meaning in life and to prove with certainty the nature of human existence. On our journey, we will be brought face-to-face with the contradicting philosophies of Nihilism and Absurdism—the ideas that life is meaningless and that a search for meaning is doomed to failure. This seminar provides a structured environment for students to come together and reflect on age-old questions, perhaps discovering some exciting new answers along the way. Development of such questioning and thinking skills will be critical to success as a university student, and as a Student of Life!

LM_4 Eyes on the Sky: Telescopes around the World

We are now at a very exciting frontier of astronomy and astrophysics with some of the largest space and ground-based telescopes being commissioned in the next 10 years. Technology and physical principals are being pushed to the limit as we place a telescope 4/5th of the way to the Moon or detect gravitational distortions that are a 1/10,000th of the size of a proton. These instruments will allow us to look further back in time, in different bands of light, with a much greater resolution, and allow us to answer some of our most fundamental questions. In this seminar, we will learn about some of the fundamental concepts of optics and electromagnetic waves and put them into practice by making toy telescopes and spectroscopes. We will review the technological challenges of observational astronomy and the clever solutions proposed to overcome them. You will also learn why different instrumental specifications are needed for different science objectives, such as observations of exoplanets, stars, black holes, and more. We will also learn about the different astronomical and space programs that are currently ongoing within the African continent.

EO_4 Tensegrities and Our Bodies

Have you ever wondered how physics could be used to explain spinal cord structure, or the cytoskeleton network within cells? Tensegrities can help us do this! Tensegrities are a class of 3-D structures consisting of compression elements connected to tension elements in a manner that allows the structure to be stable and self-supporting, even though many of the elements are not in contact with one another. Although typically used in physics to help students understand the forces of tension and compression, tensegrities are also a great model for many biological structures, such as the spine and the cytoskeleton. In this seminar, we will learn how tensegrities are built, how unit vectors and Newton's Second Law of Motion are used to find the conditions for a given tensegrity to be stable, and how tensegrities can be used to model parts of anatomy. Students will then be able to make their own 3-D tensegrities with their peers, and will leave with a better grasp of how physics is used in to understand of human and animal anatomy.

SK_4 What are the odds? Conditional Probability & the Monty Hall Problem

Whether we do it intentionally or subconsciously, we all use probability every day. We use it to make simple decisions like whether or not to carry an umbrella, wear a pair of shorts or trousers, whether to visit a friend today or wait till next week etc. In each of these cases, we may be measuring the likelihood of rain, the amount of comfort (or discomfort) we might feel wearing either one, and the chances of finding our friend home on that day, respectively. Whatever decision we make, we make on the assumption that it is the most likely to give us a desired outcome. Our decisions are also sometimes influenced by outside factors; if it is raining, then it may be more likely that you will friend your friend at home, and it may also be more likely that you will wear trousers than shorts because of the cool weather. Conditional Probability is the branch of Probability & Statistics that deals with and assess the influence of these "outside factors" on the probability of the (desired) outcome. After formally introducing conditional probability, this seminar will introduce Bayes' Rule, a theorem used more often than not in calculating conditional probability. Finally, we will go on to look at a common and fun application of conditional probability known as The Monty Hall problem, where we will help a game show contestant figure out how he can be the most successful.

JP_4 China in Africa

In 2015, China gifted \$60 billion dollars in aid to leaders and organizations on the African Continent; last July it opened a military base in Djibouti. What are the motivations of the Chinese state in Africa, and what, if anything, does Africa gain by the Chinese presence? We will address questions such as these in this seminar. No background knowledge is required, but research before the seminar is helpful (and good news--the readings provided are a great start!).

JF_4 "Terrorism"

Terrorism is a term that's thrown around quite a lot in today's media, but not many people have a clear-cut understanding of what (or who) they mean when they use the word "terrorist." In this seminar, which is based on a class offered at Yale, we will delve into the concept of terrorism, examining historical and contemporary "terrorist" groups. We will construct a class definition of terrorism, and explore and debate some of the mainstream academic theories regarding why

people resort to violence in order to further their political goals. I encourage you to come to class with an open mind; as we will see, the concept of “terrorism” is much more complex than many of us have been led to believe.

MM_4 Coup BUT Not-a-Coup: Transitions of power in Africa

The earth shook (at least for Southern Africans!) when Robert Mugabe fell from power in November 2017. The 93-year-old had led Zimbabwe for 37 years and was planning on running for re-election in 2018. But then the Zimbabwean army “temporarily” took to the streets to expel “unwanted elements in government.” Was this a coup, or constitutionally lawful dispensation of power? And did Mugabe’s resignation influence other countries’ leaders or citizens? (Just two months later Ethiopian Prime Minister Hailemariam Desalegn resigned after years of political turmoil in the country. About two weeks later Jacob Zuma, South Africa’s president, faced his 7th vote of “No confidence”, a close equivalent to impeachment, and resigned of his own free will.) What does a “Coup-not-Coup” mean for democracy on the African continent? Should populations force unpopular leaders to resign before Election Day? Should armies get involved? What is the role of the international community when faced with an unplanned change of leadership? This seminar provides an overview of this latest political phenomenon that can be both a blessing and a threat to democracy.

RR_4 Religion and Democratization

It is widely believed that religious politics are fundamentally incompatible with democracy. Despite this, democracy, by its very nature, allows potentially hostile parties to participate in the political process. A quick look at today’s democracies suggests democracy is stronger when there is church-state separation. But in many contexts that separation is not complete. To what extent do religious politics hinder or facilitate democracy? Are any of the world’s religions decisively compatible or incompatible with democracy? This seminar will examine the role of religion and politics as it relates to democratization. Are you interested in the life of Martin Luther King Jr. or Mahatma Gandhi? Come learn more about faith and its roles in the modern age.

SB_4 Invisible Cities, Invisible Neighbors

A city is defined as an inhabited place of greater size, population, or importance than a town or village. But as real places that we visit and live in, cities are much more complex than this simplified definition. They are complicated networks of people, overlapping systems and areas of liveliness and activity. Most of the time, we only get to see one small section of this complicated system. We know and understand our own spheres, and often forget that other people live very different lives in places just a few kilometers away from us. Johannesburg, South Africa, is a prime example of this. As a city that was once divided by law, Joburg continues to experience the “invisible city” phenomenon. A man sells traditional medicine in the city center. Two kilometers away, a woman works as a teller at a bank. A third person makes international finance deals from a high-rise building. Yet they may not even realize that the others exist at all, never mind right next door! In this seminar, we will examine and discuss the systems that bring people together, and keep them separated, in cities all over the world.

LK_4 Rituals: From Ancient Traditions to Daily Habits

Have you ever noticed that you always brush your teeth in the morning before showering? (Or maybe it's the other way round). Do you realize that humans celebrate births, deaths, weddings and everything in between in very similar ways to their great- great- great- ancestors? Why do habits continue for long periods of time--so long that they often become rituals? What makes these rituals necessary for the sustainability of society? Come for an in-depth discussion on the role of rituals in our daily lives and the differences between rituals in different cultures. Leave with the ability to harness your complicated mind to create powerful personal rituals to help you be an effective and happier human being.