



FOReSIGHT

CURRICULA ON ALGORITHMIC GOVERNANCE

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ABOUT THIS DOCUMENT



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The Project

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Introduction

A brief overview of the document

This document presents comprehensive curricula for Algorithmic Governance (AG), the systematic approach to managing and regulating algorithms' design, development, deployment, and use, focusing on ensuring transparency, accountability, fairness, and ethical considerations in automated decision-making processes.

The curricula are designed to provide structured learning paths for different types of participants, bridge current skill gaps, and foster forward-looking activities in skills development.

The curricula encompass a wide range of topics, from the basic AG frameworks and concepts to advanced topics such as ethics and legal aspects in AG, governance of algorithms and by algorithms, algorithmic audits, linkages between AG and business, innovation, and strategy.

The curricula are designed for various program durations, including micro, short-term, and long-term programs. Each program includes a detailed description of the skills to be developed and the evaluation procedures.

The development of these curricula is informed by insights from leading consulting firms and research organizations, including Gartner¹, UiPath², EY³, and Bearing Point⁴, but not only. These sources provide valuable information on the latest trends and best practices in AG, which are incorporated into the curricula to ensure that they are relevant and up-to-date.

¹ <https://www.advsyscon.com/blog/gartner-it-automation/>

² <https://www.uipath.com/rpa/intelligent-process-automation>

³ https://www.ey.com/en_us/consulting/intelligent-automation-consulting-services

⁴ <https://research.nelson-hall.com/search/?&avpage-views=article&id=80979&fv=1>

Background and Importance Algorithmic Governance (AG)

Algorithmic Governance (AG) has emerged as a critical field of study and practice in the digital age. It refers to the systematic approach to managing and regulating algorithms' design, development, deployment, and use. AG encompasses two key aspects: governance of algorithms and governance by algorithms.

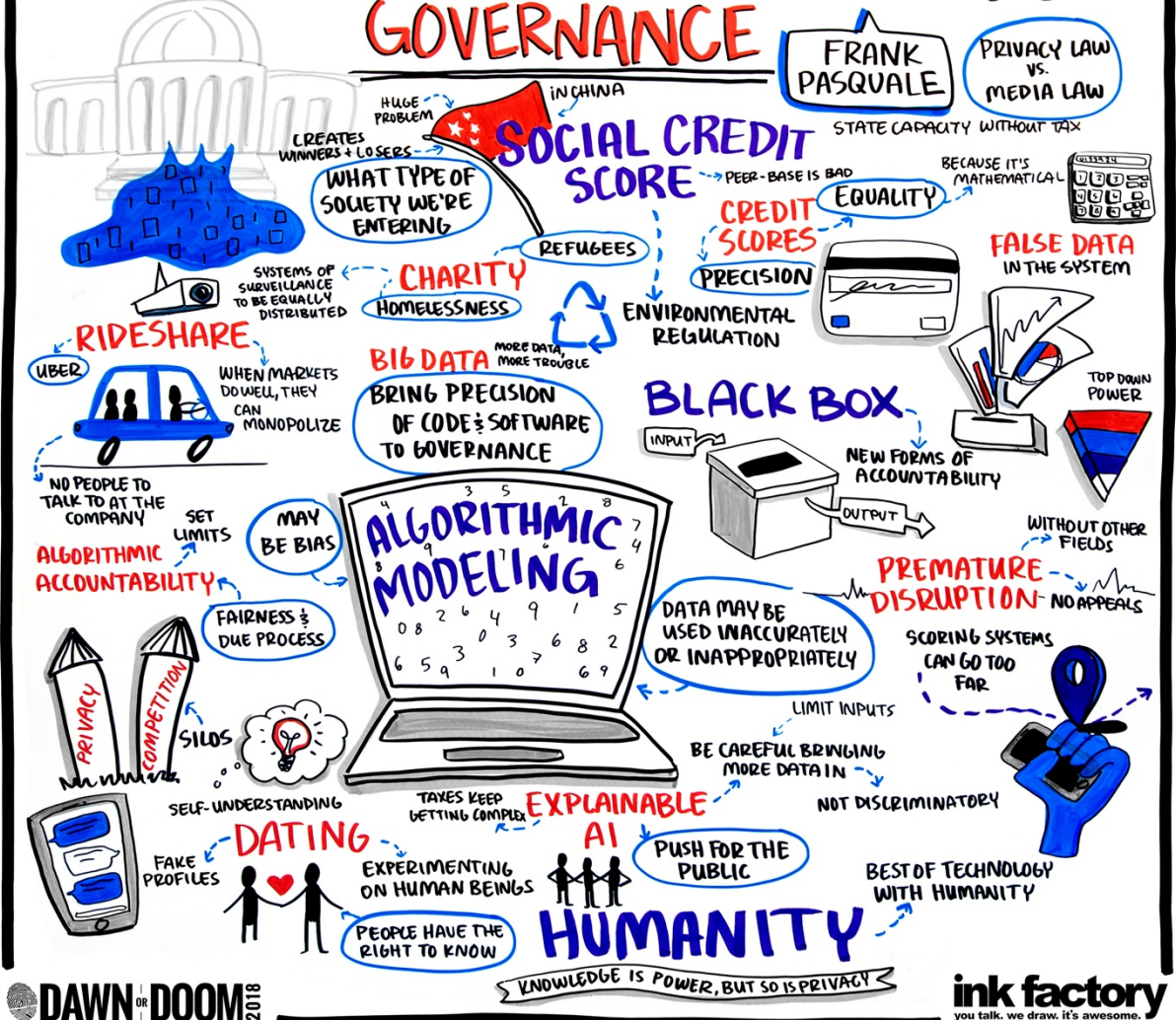
Governance of Algorithms refers to the principles and practices of managing algorithms' design, development, and use. It includes considerations of transparency, accountability, and fairness in algorithmic decision-making. This aspect of AG is concerned with ensuring that algorithms are designed and used in a manner that is ethical, unbiased, and compliant with legal and regulatory frameworks. It involves algorithmic audits, which aim to assess and verify algorithms' integrity, fairness, and transparency.

Governance by Algorithms, on the other hand, refers to the use of algorithms in decision-making processes. In various sectors, from business and policy-making to healthcare and education, algorithms are increasingly used to make decisions that humans traditionally made. While this can enhance efficiency and objectivity, it raises concerns about accountability, bias, and potential misuse. Therefore, algorithms' governance involves ensuring that algorithmic decision-making is conducted in a manner that is ethical, fair, and accountable.

The importance of AG cannot be overstated. As our reliance on algorithms grows, so does the need for effective governance. Without proper AG, there is a risk that algorithms could perpetuate biases, make unfair decisions, or be used in ways that are unethical or illegal. Furthermore, a lack of transparency in algorithmic decision-making can undermine trust in these systems.

AG is, therefore, crucial to ensure that algorithms are used responsibly and ethically. It promotes transparency, accountability, and fairness in algorithmic decision-making, fostering trust in these systems. By equipping individuals and organizations with the knowledge and skills to govern algorithms effectively, AG plays a vital role in promoting responsible innovation and the use of technology in the digital age.

THE PROMISE AND THREAT OF ALGORITHMIC GOVERNANCE



DAWN OR DOOM 2018

ink factory
you talk. we draw. it's awesome.

Source: Frank Pasquale, Ink factory, 2018⁵

⁵ <https://docs.lib.purdue.edu/dawnordoom/2018/presentations/6/>

The Need for a Structured Approach to Curriculum Development

The rapid advancement of technology and the increasing reliance on algorithms in decision-making processes across various sectors underscore the need for a structured approach to curriculum development in algorithmic governance. As algorithms become more complex and pervasive, understanding their governance becomes crucial to ensure ethical, transparent, and accountable practices. A structured curriculum in algorithmic governance provides a systematic and comprehensive framework for learning, encompassing key aspects such as ethical considerations, legal frameworks, risk mitigation, and practical management strategies. It ensures that learners gain a holistic understanding of the subject, equipping them with the necessary skills to navigate the complex landscape of algorithmic governance. Furthermore, a structured curriculum allows for progressive learning, where foundational knowledge can be built upon more advanced concepts and applications. It also facilitates the integration of theory and practice, providing learners with opportunities to apply their knowledge in real-world contexts. Therefore, a structured approach to curriculum development in algorithmic governance is essential to prepare learners effectively for the challenges and opportunities in this rapidly evolving field.

In the following sections, we will delve deeper into the various aspects of AG, including its basic and advanced concepts. We will also provide detailed curricula for various program durations, outlining the skills to be developed and the evaluation procedures to be used.

Importance of structured learning in Intelligent Automation (IA)

Intelligent Automation (IA) is complex and rapidly evolving, with new technologies, methodologies, and best practices emerging regularly. This makes it essential for individuals and organizations to engage in structured learning to understand and leverage IA effectively.

Structured learning provides a systematic approach to understanding the various components of AG, from basic concepts and technologies to more advanced topics. It allows learners to build a solid foundation of knowledge and then gradually expand on it, ensuring a comprehensive understanding of the field.

Moreover, structured learning is crucial for bridging the skills gap in AG. Many organizations and administrations (national, regional, or supranational, such as the European Union) need more skilled professionals to implement AG effectively. A structured learning approach can address this issue by providing clear learning paths and objectives, enabling learners to develop the necessary skills systematically and efficiently.

Structured learning also plays a key role in fostering innovation in AG. Providing a deep understanding of AG technologies and methodologies, it equips learners with the knowledge and skills needed to innovate and drive improvements in AG implementation.

Furthermore, structured learning is essential for ensuring AG's safe and ethical use. It can provide learners with a thorough understanding of the potential risks and ethical considerations associated with AG and equip them with the skills to manage these risks effectively.

In the following sections, we will provide detailed curricula for structured learning in AG, covering various program durations and clearly describing the skills to be developed and the evaluation procedures. These curricula are designed to provide a comprehensive and structured approach to learning in AG, ensuring that learners are well-equipped to harness the full potential of this transformative technology.

A structured curriculum on AG should include the following elements:

A foundation in the basics of AG.

Instruction in advanced AG topics like ethics and legal aspects in AG, governance of algorithms and by algorithms, algorithmic audits.

Training in the use of AG tools, frameworks and platforms.

Exposure to real-world AG projects.

Assessment of knowledge and skills

Goals and objectives of the curricula

The primary goal of the curricula is to provide a comprehensive, structured learning path for individuals (private persons, decision, or policymakers), organizations, and administrations (national, regional, or supranational, such as the European Union) seeking to understand and leverage Algorithmic Governance (AG).

The curricula aim to equip learners with the knowledge and skills necessary to navigate the complex landscape of AG, from basic concepts and technologies to more advanced topics. The curricula are designed to be flexible and adaptable, catering to various program

durations and learning preferences. They provide a roadmap for learning in AG, guiding learners from the basics to more advanced topics and equipping them with the skills needed to succeed in this rapidly evolving field.

The specific objectives of the curricula are as follows:

- **Foundational Knowledge:** To impart a comprehensive understanding of the principles and practices of algorithmic governance, ensuring students grasp the concept and its relevance in various sectors.
- **Ethical Understanding:** To emphasize the ethical considerations in algorithmic governance, including issues of fairness, transparency, and accountability, and to instill a solid ethical foundation in students.
- **Legal Awareness:** To familiarize students with the legal frameworks and regulations surrounding algorithmic governance, preparing them to navigate and comply with these laws in their professional endeavors.
- **Skills Development:** To equip students with the necessary skills to manage and govern algorithms effectively. This includes technical skills, such as understanding algorithmic design and function, and soft skills, such as critical thinking and ethical decision-making.
- **Risk Assessment and Mitigation:** Train students to identify potential risks and biases in algorithmic decision-making and develop effective strategies to mitigate these risks.
- **Audit Procedures:** To educate students on the role and importance of algorithmic audits in maintaining accountability and to provide them with the tools to conduct these audits effectively.
- **Real-world Application:** To bridge the gap between theory and practice by analyzing real-world examples of algorithmic governance, thereby enhancing students' practical understanding.
- **Innovation and Strategy:** To encourage students to explore how algorithmic governance can foster innovation and be incorporated into strategic planning, preparing them for leadership roles in their respective fields.

Skills Developed

Knowledge of AG frameworks and concepts

Ability to apply AG to real-world problems

Ability to manage the risks associated with AG

Ability to develop and implement AG strategies

Ability to use cases for AG implementation

Ability to critically assess AG

Evaluation Procedures

Assessment of knowledge and skills

Portfolio assessment

Case study analysis

Project work

Understanding Algorithmic Governance

Basics of AG: Frameworks and Concepts

Algorithmic Governance (AG) is a rapidly evolving field that focuses on the principles and practices involved in managing and regulating algorithms' design, development, deployment, and use. It encompasses two key aspects: governance of algorithms and governance by algorithms.

The **governance of algorithms** involves ensuring that algorithms are designed and used in a manner that is ethical, unbiased, and compliant with legal and regulatory frameworks. It includes considerations of transparency, accountability, and fairness in algorithmic decision-making.

On the other hand, **governance by algorithms** refers to the use of algorithms in decision-making processes. It involves ensuring that algorithmic decision-making is conducted in a manner that is ethical, fair, and accountable.

Understanding AG requires familiarity with several key frameworks and concepts. One such framework is the concept of 'algorithmic accountability,' which refers to the idea that entities (individuals, organizations, or governments) should be held accountable for the outcomes of their algorithmic systems. This involves ensuring that algorithms are transparent, that their decision-making processes can be understood and scrutinized, and that any harm or biases they cause can be identified and addressed.

Another critical concept in AG is 'algorithmic fairness,' which ensures that algorithms do not perpetuate or exacerbate existing social inequalities. This requires careful consideration of how data is collected and used and ongoing monitoring and auditing of algorithmic systems.

Finally, 'algorithmic transparency' is a crucial aspect of AG. This involves making the workings of algorithms understandable to those affected by their decisions. It includes providing clear explanations of how algorithms make decisions and enabling individuals to challenge decisions made by algorithms.

Understanding these frameworks and concepts is crucial for anyone seeking to navigate the complex landscape of AG. By equipping individuals with the knowledge and skills to govern algorithms effectively, AG plays a vital role in promoting responsible innovation and the use of technology in the digital age.⁶

⁶ <https://journals.sagepub.com/doi/full/10.1177/2053951717726554>

Curriculum Development for Algorithmic Governance

Approach to Curriculum Development

Developing a curriculum for Algorithmic Governance (AG) requires a systematic and thoughtful approach. The goal is to create a comprehensive learning path that covers AG's key concepts and technologies and addresses the practical skills needed to implement and handle AG effectively. Notably, the curriculum also integrates aspects related to resilience and foresight, preparing learners to adapt to changes and anticipate future trends in the field of AG.

The following principles guide our approach to curriculum development for AG:

1. **Learner-Centered:** The curriculum is designed with the learner at the center. It considers the diverse backgrounds and learning needs of the learners and provides flexible learning paths that cater to different learning styles and paces.
2. **Holistic Understanding:** The curriculum should provide a comprehensive understanding of Algorithmic Governance, covering governance of algorithms and governance by algorithms. It should delve into the ethical, legal, and societal aspects of Algorithmic Governance and practical strategies for managing algorithmic systems. It also addresses the need to bridge the vocabulary gap in AG, ensuring that learners can effectively communicate and collaborate in this field⁷.
3. **Skill Development:** The curriculum should focus on developing the necessary skills to navigate the complex landscape of Algorithmic Governance. This includes technical skills, such as understanding algorithmic design and function, and soft skills, such as critical thinking and ethical decision-making.
4. **Ethical Considerations:** The curriculum should emphasize the ethical considerations in Algorithmic Governance, including issues of fairness, transparency, and accountability. It should instill a strong ethical foundation in students, preparing them to make ethical decisions professionally.
5. **Resilience:** The curriculum should equip students with the skills and knowledge to adapt to changes and challenges in Algorithmic Governance. This includes understanding potential risks and biases in algorithmic decision-making and developing effective strategies to mitigate these risks.

⁷ <https://venturebeat.com/virtual/meeting-the-challenge-of-skill-gaps-in-the-age-of-digital-transformation/>

6. **Foresight:** The curriculum should incorporate foresight, preparing students for future developments in Algorithmic Governance. This includes exploring emerging trends and technologies, as well as considering potential future ethical, legal, and societal implications of Algorithmic Governance.
7. **Practical Application:** The curriculum should bridge the gap between theory and practice, allowing students to apply their knowledge in real-world contexts. This could include case studies, projects, and internships.
8. **Continuous Learning:** The curriculum should foster a culture of continuous learning, encouraging students to stay updated on the latest developments in Algorithmic Governance. This could be facilitated through ongoing seminars, workshops, and online resources.
9. **Collaboration and Networking:** The curriculum encourages collaboration and networking among learners. This can be facilitated through group projects, discussion forums, and networking events.

By adhering to these principles, the curriculum can effectively prepare students for the challenges and opportunities in the field of Algorithmic Governance, promoting ethical and effective practices in the digital age.

Forward-Looking Activities in Skills Development

In the rapidly evolving field of Algorithmic Governance (AG), more than acquiring current skills is required. Learners must also be prepared to continuously develop new skills and adapt to future trends and changes in the field. This requires a forward-looking approach to skills development, a key component of our AG curriculum.

The curriculum includes several forward-looking activities to foster this continuous learning and adaptation. These activities include:

1. **Foresight Exercises:** These exercises encourage learners to anticipate future trends and developments in AG. They may involve analyzing current trends, predicting consequences, and discussing their potential implications for AG.
2. **Scenario Planning:** This involves creating and analyzing different scenarios of how the field of AG might evolve. This can help learners to develop strategies for adapting to different potential futures.

3. **Continuous Learning Modules:** The curriculum includes regularly updated modules to reflect AG's latest trends and developments. These modules allow learners to stay up-to-date with the latest knowledge and skills in the field.
4. **Resilience Training:** This involves developing the ability to adapt to changes and overcome challenges in AG. This includes understanding potential risks and challenges in AG, developing strategies to mitigate these risks, and building resilience to cope with changes and setbacks.
5. **Innovation Projects:** These projects encourage learners to innovatively apply their knowledge and skills. This can involve developing new AG solutions, improving existing ones, or finding new applications.

Through these forward-looking activities, the curriculum aims to equip learners with the skills and mindset they need to navigate the future of AG. It fosters a culture of continuous learning and adaptation, preparing learners to seize new opportunities and overcome challenges in the rapidly evolving field of AG.

Process of Curriculum Development

Developing a curriculum for Algorithmic Governance (AG) is a systematic and iterative process involving several key steps. These steps are designed to ensure that the curriculum is comprehensive, relevant, and aligned with the needs of learners and the evolving field of AG⁸.

1. **Needs Assessment:** The first step in the curriculum development process is to conduct a needs assessment. This involves identifying learners' knowledge and skills to succeed in AG. This step was already done in the project FOrSiGHT prior to its implementation,⁹ with the following results:
 1. Why AG? Algorithmic systems are becoming widely used in decision-making processes, with potentially major implications for people, institutions, and communities. Their usage in both the public and private sectors stems from the availability of large sets of data, in combination with machine learning and mathematical modeling, and allows for more rapid decision-making and, thus, higher competitiveness. Defined as "the combination of algorithms, data and the interface process that together determine the outcomes that affect end users," algorithmic systems have been in the

⁸ <https://www.aect.org/docs/AECTstandards2012.pdf>

⁹ <https://www.td.org/atd-blog/the-what-why-and-how-of-needs-assessments>

spotlight for a European Parliament Governance Framework (“A governance framework for algorithmic accountability and transparency” - April 2019, doi: 10.2861/59990). Still, the skills related to them remain hardly permeable to current decision-makers. This is highly obvious in the reaction of the EU Member States to the pandemic crisis and in the noticeable opacity of the algorithms to the individuals, companies, and organizations they impact. A lack of disclosure risks compromising substantive oversight and accountability and is a significant issue as implemented as part of decision-making procedures that may have a direct effect on human rights (e.g., essential safety decisions in autonomous vehicles, distribution of health and social care services, etc.). Thus, it becomes essential for professionals to be aware and skilled in current and future trends related to AG to use its proper advantages and mitigate its systemic risks.

2. **Learning Objectives:** Based on the needs assessment, clear and measurable learning objectives are defined for the curriculum. These objectives guide the development of the curriculum and provide a benchmark for evaluating its effectiveness¹⁰.
3. **Content Development:** The next step is to develop the curriculum content. This involves selecting and organizing the topics to be covered and creating learning materials such as lectures, readings, exercises, and projects. The content is designed to be comprehensive, covering a wide range of topics from basic to advanced levels and integrating aspects related to resilience and foresight.¹¹
4. **Instructional Design:** The curriculum is then structured to facilitate effective learning. This involves deciding on the sequence of topics, the teaching methods, and the balance between theoretical and practical learning. The learner-centered design provides flexible learning paths that cater to different learning styles and paces¹².
5. **Evaluation and Assessment:** The curriculum includes clear evaluation and assessment procedures. These procedures allow learners to assess their progress, identify areas for improvement, and receive feedback on their performance.¹³
6. **Review and Update:** The curriculum should be regularly reviewed and updated to remain relevant and up-to-date. This involves monitoring changes in the field of AG,

¹⁰ <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>

¹¹ Morrison, G. R., Ross, S. M., Kalman, H. K., & Kemp, J. E. (2010). Designing effective instruction. John Wiley & Sons. - <https://www.wiley.com/en-ae/Designing+Effective+Instruction%2C+8th+Edition-p-9781119465980>

¹² https://www.umsl.edu/~henschke/andragogy_articles_added_04_06/groleau_Andragogy_in_Action.pdf

¹³ Suskie, L. (2009). Assessing student learning: A common sense guide. John Wiley & Sons. <https://www.wiley.com/en-us/Assessing+Student+Learning%3A+A+Common+Sense+Guide%2C+3rd+Edition-p-9781119426936>

gathering feedback from learners and instructors, and making necessary adjustments to the curriculum.¹⁴ Throughout project FOReSiGHT, the curricula were reviewed in four separate waves of the modified Agile methodology of project implementation.

Through this systematic and iterative process, the curriculum for AG is designed to provide a comprehensive, relevant, and effective learning experience. It equips learners with the knowledge and skills they need to succeed in the rapidly evolving field of AG and fosters a culture of continuous learning and adaptation.

Purpose and Overview of the Curricula

The purpose of the Algorithmic Governance (AG) curricula is to equip students, professionals, and leaders across various sectors with the knowledge and skills necessary to navigate the complex landscape of algorithmic governance. As algorithms increasingly influence decision-making processes in various fields, from business and policy-making to healthcare and education, understanding how to govern these algorithms becomes crucial.

The AG curricula aim to provide a comprehensive understanding of the principles and practices of governing algorithms and the implications of governance by algorithms. It covers algorithmic governance's ethical, legal, and societal aspects and provides practical strategies for managing algorithmic systems in various contexts.

The curricula are designed to foster critical thinking and problem-solving skills, enabling participants to evaluate the benefits and challenges of governance by algorithms, develop strategies for effective governance of algorithms within their respective fields, and apply principles of transparency, accountability, and fairness in algorithmic governance.

Furthermore, the AG curricula emphasize recognizing potential risks and biases in algorithmic decision-making and developing mitigation strategies. It also highlights the role of algorithmic audits in maintaining algorithmic accountability.

The curricula foster a culture of continuous learning. They include forward-looking activities in skills development, such as foresight exercises and continuous learning modules, which encourage participants to stay up-to-date with the latest trends and developments in AG.

¹⁴ Dick, W., Carey, L., & Carey, J. O. (2009). The systematic design of instruction. Pearson. <https://www.pearson.com/en-us/subject-catalog/p/systematic-design-of-instruction-the/P200000000952/9780137510344>

They cater to diverse participants, including students, teachers, trainers, entrepreneurs, professionals, and experts. They provide flexible learning paths that cater to different learning styles and paces.

Through these purposes, the AG curricula aim to equip participants with the knowledge and skills they need to succeed in the rapidly evolving field of AG, foster a culture of continuous learning and adaptation, and contribute to the broader development of the AG field.

The AG curricula aim to promote the responsible and ethical use of algorithms, fostering a culture of transparency, accountability, and fairness in the digital age. It seeks to empower participants to become leaders in their fields, capable of making informed decisions about the use and governance of algorithms and driving responsible innovation in the digital age.

The Algorithmic Governance (AG) curricula are structured to cater to various learning needs and durations. They are designed to provide comprehensive, flexible, and forward-looking learning experiences. The curricula are divided into three main program durations: Micro Program, Short Term, and Long Term.

Structure of the Curricula: The curricula are structured around key topics in AG, including basic and advanced AG frameworks and concepts, ethics and legal aspects in AG, governance of algorithms and by algorithms, algorithmic audits, linkages between AG and business, innovation, and strategy. Each topic is covered in depth, balancing theoretical knowledge and practical application. The curricula also integrate aspects of resilience and foresight, preparing participants to adapt to changes and anticipate future trends in AG.

Micro Programs:

The Micro Program is designed for learners who want to understand AG. It consists of short courses that can be completed in a few hours or days. The Micro Program covers the basics of AG and provides an overview of key topics. It is ideal for professionals who want to stay up-to-date with the latest trends in AG, or for beginners who want to get a taste of what AG is all about.

Short-Term Programs:

The Short-Term Program is designed for learners who want to understand AG more deeply. It consists of courses that can be completed in a few weeks or months. The Short-Term Program covers both basic and advanced AG topics and includes practical exercises and projects. It is ideal for professionals who want to enhance their skills in IA or for students who want to supplement their studies with practical AG knowledge.

Long-Term Programs:

The Long-Term Program is designed for learners who want to understand AG comprehensively. It consists of courses that can be completed in a few months or a year. The Long Term Program covers all aspects of AG in-depth and includes a capstone project allowing learners to apply their knowledge in the real world. It is ideal for professionals who want to specialize in AG or for students who want to pursue a career in AG.

The AG curricula cater to a wide range of learning needs and objectives through these different program durations. They provide flexible learning paths that allow learners to choose the level of depth and duration that suits their needs.

Examples of Learning paths for Algorithmic Governance

The concept of 'learning paths' has gained significant traction in education and professional development. A learning path is a sequential and curated set of educational resources or courses designed to guide learners toward a specific learning goal or competency¹⁵.

Learning paths are typically structured to allow learners to progress from foundational knowledge to more advanced concepts, ensuring a comprehensive understanding of the subject matter. They are often personalized to cater to each learner's unique learning needs and pace, thereby enhancing the effectiveness of the learning process¹⁶.

Learning paths are rooted in the understanding that learning is not a one-size-fits-all process. Different learners have different learning styles, prior knowledge, and objectives. By providing a structured and personalized learning journey, learning paths enable learners to acquire knowledge and skills in a manner that is most effective for them¹⁷.

Moreover, learning paths are about more than just the content. They also encompass assessments, feedback mechanisms, and opportunities for practical application, providing a holistic learning experience. They are often integrated with learning management systems, enabling tracking of learner progress and performance¹⁸.

Learning paths represent a strategic and learner-centric approach to education and professional development. They provide a roadmap for learners to achieve their learning goals, enhancing the efficiency and effectiveness of the learning process¹⁹.

We included our curricula and study materials in specific learning paths, as listed below.

Apart from these learning paths, we are providing in the following sections, specific curricula for micro-programs, short-term programs, and long-term programs for managers (graduate studies), business students (undergraduate and graduate studies), non-tech students (undergraduate studies) and entrepreneurs (life-long-learning courses).

¹⁵ <https://www.learnupon.com/blog/learning-paths-walkthrough/>

¹⁶ <https://www.instancy.com/what-are-the-10-essentials-to-a-learning-path/>

¹⁷ <https://www.learnupon.com/blog/learning-paths-walkthrough/>

¹⁸ <https://www.instancy.com/what-are-the-10-essentials-to-a-learning-path/>

¹⁹ <https://www.learnupon.com/blog/learning-paths-walkthrough/>

Audience	Topics	Objectives/Goals	Course Modules	Content Types	Duration	Assessment & Feedback	Certification
Managers	Algorithmic Governance	<ul style="list-style-type: none"> - Understand algorithmic governance principles - Implement data-driven decisions - Manage governance risks 	<ol style="list-style-type: none"> 1. Governance Fundamentals 2. Data & Decisions 3. Risk Management 4. Legal & Ethical Aspects 	E-Learning, Webinars, Case Studies	2 Months	Quizzes, Project, Survey, Feedback Sessions	Governance Management Certificate
Business Students	Algorithmic Governance	<ul style="list-style-type: none"> - Understand governance algorithms - Analyze governance data - Consider ethical implications 	<ol style="list-style-type: none"> 1. Governance Algorithms 2. Data Analysis in Governance 3. Ethics & Governance 4. Case Studies 	E-Learning, Workshops, Case Studies	1 Semester	Midterm, Final Exam, Group Projects, Class Discussions	Course Completion Certificate
Tech Students	Algorithmic Governance	<ul style="list-style-type: none"> - Understand governance algorithms - Develop governance solutions - Evaluate ethical & legal aspects 	<ol style="list-style-type: none"> 1. Governance Algorithms 2. Developing Governance Solutions 3. Ethics & Legal 4. Project 	E-Learning, Labs, Workshops, Project	1 Semester	Midterm, Final Exam, Project, Code Reviews	Course Completion Certificate
Non-Tech Students	Algorithmic Governance	<ul style="list-style-type: none"> - Understand governance algorithms - Grasp impact on society - Evaluate ethical considerations 	<ol style="list-style-type: none"> 1. Governance Algorithms 2. Governance & Society 3. Ethics in Governance 4. Discussion & Case Studies 	E-Learning, Discussions, Case Studies	1 Semester	Midterm, Final Exam, Group Discussions, Essays	Course Completion Certificate
Entrepreneurs	Algorithmic Governance	<ul style="list-style-type: none"> - Understand algorithmic governance - Implement governance in start-ups - Evaluate risks & legal aspects 	<ol style="list-style-type: none"> 1. Governance Basics 2. Governance in Start-ups 3. Risk & Legal 4. Case Studies & Best Practices 	E-Learning, Webinars, Case Studies	3 Months	Quizzes, Project, Survey, Feedback Sessions	Governance for Entrepreneurs Certificate

Curricula on Algorithmic Governance

Curriculum 1: Microprogram on Algorithmic Governance for Managers

Course Description:

This intensive one-week microprogram is designed to give managers a comprehensive understanding of algorithmic governance. It explores the principles and practices of governing algorithms and the implications of governance by algorithms. The course will delve into algorithmic governance's ethical, legal, and societal aspects and practical strategies for managing algorithmic systems in various organizational contexts.

Learning Outcomes:

Upon completion of this microprogram, participants will be able to:

1. Understand the concept of algorithmic governance and its relevance in today's digital world.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within their organizations.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance: Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance: Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance: Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms: Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms: Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits: Understanding the role and process of algorithmic audits in maintaining accountability.

7. Case Studies in Algorithmic Governance: Analysis of real-world examples of algorithmic governance in various sectors.

Evaluation Procedures:

The evaluation for this microprogram will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance.
3. Group Project (30%): Development of an algorithmic governance strategy for a hypothetical organization.
4. Final Examination (20%): A written examination covering all course content.

Curriculum 2: Short-Term Program on Algorithmic Governance for Managers

Course Description:

This 90-hour short-term program is designed to give managers an in-depth understanding of algorithmic governance. It explores the principles and practices of governing algorithms and the implications of governance by algorithms. The course will delve into algorithmic governance's ethical, legal, and societal aspects and practical strategies for managing algorithmic systems in various organizational contexts.

Learning Outcomes:

Upon completion of this short-term program, participants will be able to:

1. Understand the concept of algorithmic governance and its relevance in today's digital world.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within their organizations.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance (10 hours): Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance (15 hours): Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance (15 hours): Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms (20 hours): Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms (15 hours): Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits (10 hours): Understanding the role and process of algorithmic audits in maintaining accountability.
7. Case Studies in Algorithmic Governance (5 hours): Analysis of real-world examples of algorithmic governance in various sectors.

Evaluation Procedures:

The evaluation for this short-term program will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance.
3. Group Project (30%): Development of an algorithmic governance strategy for a hypothetical organization.
4. Final Examination (20%): A written examination covering all course content.

Curriculum 3: Long-Term Program on Algorithmic Governance for Managers

Course Description:

This long-term program, spanning two semesters with five courses per semester, is designed to provide managers with an in-depth understanding of algorithmic governance. It explores the principles and practices of governing algorithms and the implications of governance by algorithms. The course will delve into algorithmic governance's ethical, legal, and societal aspects and practical strategies for managing algorithmic systems in various organizational contexts.

Learning Outcomes:

Upon completion of this long-term program, participants will be able to:

1. Understand the concept of algorithmic governance and its relevance in today's digital world.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within their organizations.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

The program is divided into two semesters, each consisting of five courses.

Semester 1:

1. Introduction to Algorithmic Governance (56 hours): Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance (56 hours): Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance (56 hours): Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms (56 hours): Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms (56 hours): Examination of the implications of decision-making by algorithms, including potential biases and risks.

Semester 2:

6. Algorithmic Audits (56 hours): Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Business (56 hours): Analysis of real-world examples of algorithmic governance in various business sectors.
8. Algorithmic Governance and Innovation (56 hours): Exploring the role of algorithmic governance in fostering innovation in business.
9. Algorithmic Governance and Strategy (56 hours): Understanding how to incorporate algorithmic governance into business strategy.
10. Capstone Project in Algorithmic Governance (56 hours): A comprehensive project that allows students to apply what they have learned in a real-world context.

Evaluation Procedures:

The evaluation for this long-term program will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (20%): Submission of a written analysis of a provided case study related to algorithmic governance.
3. Group Project (20%): Development of an algorithmic governance strategy for a hypothetical organization.
4. Final Examination (20%): A written examination covering all course content.
5. Capstone Project (20%): A comprehensive project that allows students to apply what they have learned in a real-world context.

Curriculum 4: Microprogram on Algorithmic Governance for Entrepreneurs

Course Description:

This intensive one-week microprogram is specifically designed for entrepreneurs who aim to understand and apply the principles of algorithmic governance in their ventures. The course will provide a comprehensive understanding of algorithms and governance by algorithms, focusing on the ethical, societal, and legal aspects. It will also offer practical strategies for implementing and managing algorithmic systems in a start-up environment.

Learning Outcomes:

Upon completion of this microprogram, participants will be able to:

1. Understand the concept of algorithmic governance and its relevance in the entrepreneurial context.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms in a start-up environment.
4. Develop strategies for effective governance of algorithms within their start-ups.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance: Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance: Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance: Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms: Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms: Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits: Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Start-ups: Special focus on applying algorithmic governance in a start-up environment, including case studies.

Evaluation Procedures:

The evaluation for this microprogram will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance in start-ups.
3. Business Plan Project (30%): Development of an algorithmic governance strategy for a hypothetical start-up.
4. Final Examination (20%): A written examination covering all course content.

Curriculum 5: Short-term program on Algorithmic Governance for Entrepreneurs

Course Description:

This 90-hour short-term program is specifically designed for entrepreneurs who aim to understand and apply the principles of algorithmic governance in their ventures. The course will provide a comprehensive understanding of algorithms and governance by algorithms, focusing on the ethical, societal, and legal aspects. It will also offer practical strategies for implementing and managing algorithmic systems in a start-up environment.

Learning Outcomes:

Upon completion of this short-term program, participants will be able to:

1. Understand the concept of algorithmic governance and its relevance in the entrepreneurial context.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms in a start-up environment.
4. Develop strategies for effective governance of algorithms within their start-ups.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance (10 hours): Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance (15 hours): Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance (15 hours): Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms (20 hours): Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms (15 hours): Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits (10 hours): Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Start-ups (5 hours): Special focus on applying algorithmic governance in a start-up environment, including case studies.

Evaluation Procedures:

The evaluation for this short-term program will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance in start-ups.
3. Business Plan Project (30%): Development of an algorithmic governance strategy for a hypothetical start-up.
4. Final Examination (20%): A written examination covering all course content.

Curriculum 6: Long-term program on Algorithmic Governance for Entrepreneurs

Course Description:

This comprehensive program is specifically designed for entrepreneurs who aim to understand and apply the principles of algorithmic governance in their ventures. The course will provide a deep understanding of algorithms and governance by algorithms, focusing on the ethical, societal, and legal aspects. It will also offer practical strategies for implementing and managing algorithmic systems in a start-up environment.

Learning Outcomes:

Upon completion of this long-term program, participants will be able to:

1. Understand the concept of algorithmic governance and its relevance in the entrepreneurial context.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms in a start-up environment.
4. Develop strategies for effective governance of algorithms within their start-ups.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

Semester 1:

1. Introduction to Algorithmic Governance (56 hours): Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance (56 hours): Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance (56 hours): Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms (56 hours): Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms (56 hours): Examination of the implications of decision-making by algorithms, including potential biases and risks.

Semester 2:

6. Algorithmic Audits (56 hours): Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Start-ups (56 hours): Special focus on applying algorithmic governance in a start-up environment, including case studies.
8. Algorithmic Governance and Innovation (56 hours): Exploring the role of algorithmic governance in fostering innovation in start-ups.
9. Algorithmic Governance and Strategy (56 hours): Understanding how to incorporate algorithmic governance into start-up strategy.
10. Capstone Project in Algorithmic Governance (56 hours): A comprehensive project that allows students to apply what they have learned in a real-world context.

Evaluation Procedures:

The evaluation for this long-term program will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (20%): Submission of a written analysis of a provided case study related to algorithmic governance in start-ups.
3. Group Project (20%): Developing an algorithmic governance strategy for a hypothetical start-up.
4. Final Examination (20%): A written examination covering all course content.
5. Capstone Project (20%): A comprehensive project that allows students to apply what they have learned in a real-world context.

Curriculum 7: Microprogram on Algorithmic Governance for Business students - graduate

Course Description:

This microprogram, lasting 40 hours, is tailored for graduate business students seeking to understand the intricacies of algorithmic governance. The course will delve into the principles and practices of governing algorithms and the implications of governance by algorithms. It will cover algorithmic governance's ethical, legal, and societal aspects and provide practical strategies for managing algorithmic systems in various business contexts.

Learning Outcomes:

Upon completion of this microprogram, students will be able to:

1. Understand the concept of algorithmic governance and its relevance in today's business world.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within various business contexts.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance: Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance: Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance: Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms: Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms: Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits: Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Business: Analysis of real-world examples of algorithmic governance in various business sectors.

Evaluation Procedures:

The evaluation for this microprogram will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance in business.
3. Group Project (30%): Developing an algorithmic governance strategy for a hypothetical business.
4. Final Examination (20%): A written examination covering all course content.

Curriculum 8: Short-term program on Algorithmic Governance for Business students - graduate

Course Description:

This 90-hour short-term program is tailored for graduate business students seeking to understand the intricacies of algorithmic governance. The course will delve into the principles and practices of governing algorithms and the implications of governance by algorithms. It will cover algorithmic governance's ethical, legal, and societal aspects and provide practical strategies for managing algorithmic systems in various business contexts.

Learning Outcomes:

Upon completion of this short-term program, students will be able to:

1. Understand the concept of algorithmic governance and its relevance in today's business world.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within various business contexts.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance (10 hours): Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance (15 hours): Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance (15 hours): Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms (20 hours): Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms (15 hours): Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits (10 hours): Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Business (5 hours): Analysis of real-world examples of algorithmic governance in various business sectors.

Evaluation Procedures:

The evaluation for this short-term program will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance in business.
3. Group Project (30%): Developing an algorithmic governance strategy for a hypothetical business.
4. Final Examination (20%): A written examination covering all course content.

Curriculum 9: Long-term program on Algorithmic Governance for Business students - graduate

Course Description:

This comprehensive long-term program, spanning two semesters with five 56-hour courses each semester, is designed for graduate business students seeking to delve deep into algorithmic governance. The course will explore the principles and practices of governing algorithms and the implications of governance by algorithms. It will cover algorithmic governance's ethical, legal, and societal aspects and provide practical strategies for managing algorithmic systems in various business contexts.

Learning Outcomes:

Upon completion of this long-term program, students will be able to:

1. Understand the concept of algorithmic governance and its relevance in today's business world.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within various business contexts.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

Semester 1:

1. Introduction to Algorithmic Governance (56 hours): Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance (56 hours): Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance (56 hours): Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms (56 hours): Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms (56 hours): Examination of the implications of decision-making by algorithms, including potential biases and risks.

Semester 2:

6. Algorithmic Audits (56 hours): Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Business (56 hours): Analysis of real-world examples of algorithmic governance in various business sectors.
8. Algorithmic Governance and Innovation (56 hours): Exploring the role of algorithmic governance in fostering innovation.
9. Algorithmic Governance and Strategy (56 hours): Understanding how to incorporate algorithmic governance into business strategy.
10. Capstone Project in Algorithmic Governance (56 hours): A comprehensive project that allows students to apply what they have learned in a real-world context.

Evaluation Procedures:

The evaluation for this long-term program will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (20%): Submission of a written analysis of a provided case study related to algorithmic governance.
3. Group Project (20%): Developing an algorithmic governance strategy for a hypothetical business.
4. Final Examination (20%): A written examination covering all course content.
5. Capstone Project (20%): A comprehensive project that allows students to apply what they have learned in a real-world context.

Curriculum 10: Microprogram on Algorithmic Governance for Policymakers

Course Description:

This intensive one-week microprogram is designed for policymakers interested in understanding algorithmic governance's complexities. The course will provide a comprehensive overview of the principles and practices of governing algorithms and the implications of governance by algorithms. It will cover algorithmic governance's ethical, legal, and societal aspects, with a particular focus on policy development and implementation.

Learning Outcomes:

Upon completion of this microprogram, students will be able to:

1. Understand the concept of algorithmic governance and its relevance in policy making.
2. Identify the ethical, legal, and societal implications of algorithmic governance.
3. Evaluate the benefits and challenges of governance by algorithms.
4. Develop strategies for effective governance of algorithms within policy frameworks.
5. Apply principles of transparency, accountability, and fairness in algorithmic governance.
6. Understand the role of algorithmic audits and their importance in maintaining algorithmic accountability.
7. Recognize the potential risks and biases in algorithmic decision-making and develop mitigation strategies.

Course Content:

1. Introduction to Algorithmic Governance: Definition, importance, and key concepts in algorithmic governance.
2. Ethics in Algorithmic Governance: Exploration of ethical considerations in algorithm design, implementation, and use.
3. Legal Aspects of Algorithmic Governance: Overview of legal frameworks and regulations related to algorithmic governance.
4. Governance of Algorithms: Strategies for managing algorithms, including transparency, accountability, and fairness.
5. Governance by Algorithms: Examination of the implications of decision-making by algorithms, including potential biases and risks.
6. Algorithmic Audits: Understanding the role and process of algorithmic audits in maintaining accountability.
7. Algorithmic Governance in Policy Making: Special focus on applying algorithmic governance in policy development and implementation, including case studies.

Evaluation Procedures:

The evaluation for this microprogram will be based on:

1. Participation (20%): Active involvement in class discussions and activities.
2. Case Study Analysis (30%): Submission of a written analysis of a provided case study related to algorithmic governance in policy making.
3. Policy Proposal Project (30%): Development of a policy proposal addressing a specific issue in algorithmic governance.
4. Final Examination (20%): A written examination covering all course content.

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