Developing a Curriculum in GIS

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THE NGCC CORE CURRICULUM PROJECT

Developing a Curriculum in GIS

Abstract

The National Core Curriculum Project was developed in the summer of 1996 to support the Network of Community Colleges (NC3) with the development of a core curriculum in Geographic Information Systems (GIS). The core curriculum project was designed to identify the critical concepts and skills necessary for students to develop a foundational knowledge of GIS. The project involved a comprehensive review of the existing literature on GIS education and the development of a set of core competencies that would guide the development of the curriculum. The resulting core curriculum provides a framework for programs to develop and implement effective GIS curricula.

Acknowledgments

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The curriculum will be important for both the teacher and the student. The goal of the curriculum is to enhance the student's understanding of GIS, to provide a hands-on, interactive experience, and to prepare them for future careers in the field. The curriculum will be structured to allow for flexibility and adaptability, incorporating the latest technologies and methodologies. The curriculum will also include opportunities for students to participate in real-world projects, building their skills and confidence in using GIS tools.

There are several key elements that will shape the curriculum. These include:

1. **Foundation Courses**: These will provide a solid understanding of the basic principles of GIS, including data management, spatial analysis, and mapping.
2. **Core Courses**: These will focus on specific GIS applications, such as urban planning, natural resource management, and environmental monitoring.
3. **Electives**: Students will have the opportunity to choose electives that align with their interests and career goals.

The curriculum will also incorporate an integrated approach to education, combining theoretical knowledge with practical applications. This will include hands-on workshops, field trips, and guest lectures from industry experts. The curriculum will be continuously evaluated and updated to ensure it remains relevant and effective.
The technical issues in computer science are often intertwined with the broader themes of ethical and social implications. It is essential to ensure that the technical advancements in the field are developed responsibly to address the ethical concerns and societal impacts. One of the major challenges is the integration of computer systems into various aspects of life, which requires careful consideration of privacy, security, and the impacts on society. This is particularly important in the context of artificial intelligence and machine learning, where decisions made by algorithms can have significant consequences on individuals and groups.

In this context, it is crucial to develop a comprehensive curriculum that covers not only the technical aspects but also the ethical and social implications. This will help students develop a well-rounded understanding of the field and prepare them to be responsible practitioners. The curriculum should include courses on ethics, privacy, and social impact, as well as topics on emerging technologies and their potential consequences.

Consequently, the following course outline has been developed to address these considerations:

**Course Outline**

- **Introduction to Artificial Intelligence**
  - Basics of AI
  - Ethical considerations
- **Privacy and Security**
  - Principles of privacy
  - Security mechanisms
- **Machine Learning**
  - Algorithms and models
  - Bias and fairness in AI
- **Ethics and Society**
  - The role of AI in society
  - Responsibility and accountability

This curriculum aims to equip students with the knowledge and skills necessary to navigate the rapidly evolving field of AI while ensuring that they understand and address the ethical and social implications of their work.
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Although the curriculum is intended to fit in a year's sequence of courses, it provides a model for other courses in computer science. The courses are designed to provide a foundation in computer science that can be expanded upon in later courses. The courses cover a range of topics, from programming to data structures, and are designed to build on each other. The courses are also designed to be self-contained, so that students can take them in any order. The courses are offered in both the fall and spring semesters, and are designed to fit into the typical academic calendar.
Developing a Curriculum in GCIS

In the world and among nations, the curriculum and instructional delivery system have a profound impact on the way we think, learn, and live. The development of a curriculum must be a collaborative effort that involves teachers, administrators, parents, students, and the community. The curriculum should be designed to meet the needs of all students and to prepare them for success in the 21st century.

1. Introduction to the Curriculum

2. Curricular Framework

3. Curriculum Development

4. Curriculum Implementation

5. Curriculum Evaluation

6. Conclusion

Table 2

<table>
<thead>
<tr>
<th>Class</th>
<th>Grade</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<td>4</td>
<td>12th</td>
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Reference:

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Chapter Title

1. Developing a Curriculum in CIS


3. Inclusion of Specific Areas in the Curriculum

4. Curriculum Standards and Guidelines

5. Assessment and Evaluation of Curriculum

6. Continuous Improvement of Curriculum

7. Role of Faculty and Industry in Curriculum Development

8. Impact of Technology on Curriculum Development

9. Ethical and Legal Considerations in Curriculum Development

10. Curriculum Development for Online Learning

11. Curriculum Development for International Students

12. Curriculum Development for Diverse Populations

13. Curriculum Development for Pre-Service Teachers

14. Curriculum Development for Continuing Education

15. Curriculum Development for Industry Collaboration

16. Curriculum Development for Transfer Students

17. Curriculum Development for Community Engagement

18. Curriculum Development for Professional Certification

19. Curriculum Development for Entrepreneurship

20. Curriculum Development for Global Competencies

21. Curriculum Development for Sustainability

22. Curriculum Development for Multicultural Competencies

23. Curriculum Development for Lifelong Learning

24. Curriculum Development for Service-Learning


26. Curriculum Development for Inclusive Education

27. Curriculum Development for Personalized Learning

28. Curriculum Development for Interdisciplinary Approaches

29. Curriculum Development for Collaborative Learning

30. Curriculum Development for Social Media

31. Curriculum Development for Virtual Reality

32. Curriculum Development for Augmented Reality

33. Curriculum Development for Game-Based Learning

34. Curriculum Development for Mobile Learning

35. Curriculum Development for Makerspaces

36. Curriculum Development for Flipped Classroom

37. Curriculum Development for Active Learning

38. Curriculum Development for Project-Based Learning


40. Curriculum Development for Problem-Based Learning

41. Curriculum Development for Inquiry-Based Learning

42. Curriculum Development for Experiential Learning

43. Curriculum Development for Critical Thinking

44. Curriculum Development for Creative Thinking

45. Curriculum Development for Entrepreneurial Thinking

46. Curriculum Development for Global Thinking

47. Curriculum Development for Ethical Thinking

48. Curriculum Development for Emotional Intelligence

49. Curriculum Development for Mindfulness

50. Curriculum Development for Resilience
Welcome to the Department of Geography at the University of Maryland, College Park. This page contains introductory material for an instructor of introductory geography courses. The course is designed to provide students with an understanding of the fundamental principles and methods of geography, as well as an appreciation of the role of geography in contemporary society. The course emphasizes the importance of geographic knowledge in addressing global issues, such as environmental sustainability, economic development, and technological innovation. The course covers the basics of geographic information systems (GIS) and remote sensing, as well as the role of geography in shaping human societies and environments. The course also includes lectures on the history of geography, the role of geography in modern society, and the role of geography in addressing global challenges. The course aims to develop students' critical thinking skills, analytical skills, and communication skills, as well as their ability to think geographically and to apply geographic knowledge to real-world problems.