

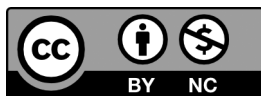
# Integrating Science and Technology Ethics Education into College Ideological and Political Theory Courses: Value Implications and Practical Pathways

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**Abstract:** With the continuous advancement of a new round of scientific and technological revolution and industrial transformation, the ethical challenges triggered by scientific and technological innovation have become increasingly prominent. However, science and technology (S&T) ethics education in Chinese universities remains relatively weak and has yet to establish a stable and effective approach. Against this backdrop, integrating S&T ethics education into Ideological and Political Theory Courses (IPTCs) can enhance the contemporary relevance of these courses, enrich their teaching content and cultivate students' science and technology ethics literacy. Nevertheless, to ensure that such integration goes beyond superficial implementation, it is essential to advance the integration of teaching content by developing modular teaching units, optimizing teaching methods to enhance classroom applicability, strengthening faculty development to bolster interdisciplinary teaching capacity, and improving collaborative mechanisms. A systematic promotion of this integration helps address the practical dilemmas in current S&T ethics education. It lays a foundation for fostering innovative talents who possess both scientific competence and ethical responsibility.

**Keywords:** Science and Technology Ethics Education; Ideological and Political Theory Courses; Value Implications; Practical Pathways



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In the digital and intelligence era, emerging technologies such as Artificial Intelligence (AI), big data, and gene editing are reshaping lifestyles with unprecedented depth and breadth. While science and technology (S&T) innovation provides immense societal benefits, it simultaneously triggers complex ethical dilemmas. In March 2022, the General Office of the CPC Central Committee and General Office of the State Council (2022) issued the *Opinions on Strengthening the Governance of Science, Technology and Ethics*, which stressed the importance of integrating ethics

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education into the talent cultivation system. According to the *Special Research Report on Science and Technology Ethics Education in Colleges and Universities (2024)*, most Chinese universities lack a comprehensive and systematic S&T ethics curriculum (Yang & Li, 2024). Ideological and Political Theory Courses (IPTCs), which serve as the primary channel for value guidance and character building, must address real-world ethical issues—such as AI and gene editing—to maintain their contemporary relevance and explanatory power (Luo & Yu, 2024). Integrating S&T ethics education is therefore both a practical requirement for risk prevention and an internal necessity for enhancing the effectiveness of IPTCs (Li, 2022).

## 1 The Contemporary Context of Integration

The integration of S&T ethics into IPTCs stems from a dual context: the increasing value requirements of Chinese-style modernization and the rising ethical risks of intelligent technologies.

Firstly, there is a strategic alignment between the “Lide Shuren” (fostering virtue through education) mission and the cultivation of ethical literacy in S&T talents (Xi, 2020). S&T ethics education aligns with these goals by guiding students to follow ethical norms and promote “Science and Technology for the Benefit of Mankind”. This integration fulfills the urgent need for enhanced ethics education and serves as a major measure for implementing the fundamental task of fostering virtue through education.

Secondly, there is a pressing demand to address the widespread ethical risks under intelligent technological shifts. The pervasive nature of AI has led to ethical challenges such as algorithmic discrimination, data privacy leaks, and technological abuse (Sun & Zhang, 2025). The *Special Research Report on Science and Technology Ethics Education in Colleges and Universities (2024)* noted that the current system suffers from structural gaps and rigid teaching methods. Utilizing the established platform of IPTCs—which covers all students and has guaranteed instructional hours—provides an immediate and effective means to bridge this educational gap and prevent ethical risks (Zhang & Ji, 2023).

## 2 Value Implications of Integration

Integrating S&T ethics does not merely expand the syllabus; it injects fresh, realistic elements into the moral education framework of IPTCs.

One key value lies in consolidating the value orientation of IPTCs. By focusing on “Science and Technology for the Benefit of Mankind”, IPTCs remain connected to students’ daily realities and digital lives, ensuring the curriculum maintains its vitality. This integration allows for the contextualized teaching of Socialist Core Values through the lens of AI ethics and biomedical boundaries (Zhang, Yang, & Cheng, et al., 2025). Furthermore, it strengthens ideological discourse power in ideological education, enables universities to clarify China’s position on science and technology governance and respond effectively to external ideological challenges (Publicity Department of the Communist Party of China & Office of the National Security Commission of the Communist Party of China, 2022).

Another value is the enrichment of concrete teaching content. Traditional IPTCs are sometimes criticized as being disconnected from lived experience (Cao, 2025). S&T ethics provides vivid materials—such as research integrity and data privacy cases—that transform abstract principles into practical discussions. By introducing an operational

framework of norms—defining ethical boundaries within technological application—IPTCs can help students move from theoretical understanding to stable behavioral criteria in specific S&T contexts.

Finally, it cultivates students' ethical literacy and sense of responsibility. As the future builders of the nation, the values and orientation of young people determine the future of the country and society (Xi, 2022). Ethics education improves their rational judgment and fosters a sense of mission to serve the people through technology. This ensures that future S&T professionals can maintain a balance between scientific rationality and humanistic care, providing a solid moral foundation for high-level self-reliance and self-improvement in science and technology.

### 3 Practical Pathways for Implementation

Achieving integration requires systemic exploration across four dimensions: content, methodology, faculty, and mechanisms, directly addressing current systemic bottlenecks.

Regarding content, the focus should be on constructing modular teaching units such as AI ethics, engineering ethics, and bioethics to bridge “structural gaps”. Teachers should design integrated modules based on student needs, such as engineering ethics or bioethics, and embed them into existing IPTC chapters (Ye & Jia, 2021). By establishing a stable and replicable content structure, universities can ensure a cohesive curriculum that fills the void in systematic S&T ethics instruction.

Regarding methodology, it is necessary to optimize instructional methods to overcome “rigid teaching methods”. Instead of passive lecturing, teachers should emphasize inquiry-based learning and scenario-based simulation. Case studies involving AI or gene editing can help students internalize the relationship between rights and responsibilities, enhancing the classroom's adaptability and students' engagement.

Regarding faculty, the goal is to enhance interdisciplinary teaching capacity to avoid “vague discussions”. This involves equipping IPTC teachers with basic technical knowledge, while training STEM teachers in ethical discourse. Establishing interdisciplinary teaching teams through collective lesson preparation ensures that technical explanations and value guidance are accurately aligned, replacing superficial rhetoric with precise, technology-grounded analysis (Fang, Jiang & Wang, 2026).

Regarding mechanisms, a collaborative environment must be established to create synergy. The university administration should provide unified planning and clear divisions of responsibility. Stable resource support and a process-oriented quality feedback mechanism will ensure that the integration remains effective and continuously improves over time.

### 4 Conclusion

Integrating S&T ethics education into IPTCs is a vital direction for educational reform in the new era. Faced with the ethical challenges of emerging technologies, universities should uphold the Marxist outlook on science and technology and the correct value orientation. This fusion not only enhances the contemporary relevance of Ideological and Political Theory Courses but also provides the moral foundation necessary for achieving national strength. By courageously practicing this educational innovation, universities can fulfill their mission of “cultivating talents for the

Party and the country” and supply a steady stream of talents for the building of an S&T powerhouse.

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