# Current Status and Plans of the Institute of Information Security Education for the Gifted

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## 1. Introduction

The Institute of Information Security Education for the Gifted was established to foster cybersecurity talent at a national level. Its mission is to discover and nurture gifted students who will contribute to national security and competitiveness. Since its designation by the Ministry of Education in 2014, the center has been operating across four regions (Capital, Chungcheong/Daejeon/Sejong, Jeolla/Gwangju, Gyeongsang/Busan/Daegu/Ulsan) and has provided structured programs for middle and high school students.

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## 2. Necessity and History of the Center

Information security gifted education is a unique academic field distinct from traditional science or computer science gifted programs. It requires proactive curriculum development led by the state.

- **Necessity**: Essential for national security, enhancing competitiveness, and leading advanced research topics.
- **History**:
  - Established on September 11, 2014, as a Ministry of Education–designated center.
  - Each year, approximately 90 students were admitted per region, with a total of 943 graduates by 2024.
  - In 2025, the program was restructured into Basic, Intermediate, and Advanced tracks, admitting 60 students annually.

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## 3. Organization and Governance

The centers are operated by regional universities, with Seoul Women’s University leading the Capital region. Oversight is provided by the Ministry of Education and KERIS. The governance structure includes:

- Director, Professors’ Board, Administrative Office, Research Division, and Cooperation Division.
- Responsibilities include curriculum development, evaluation, project-based learning, mentoring, and collaboration with external partners.
- Industry experts, faculty advisors, and research fellows participate to bridge academic knowledge and field practice.

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# 4. Student Recruitment and Selection

The 2025 recruitment process consists of three stages:

1. **Document Review**: Evaluation of learning ability, suitability for gifted education, and potential.
2. **Interview**: Assessment of personality, academic ability, and potential for growth as future white-hat hackers.
3. **Final Review**: Comprehensive assessment by the Selection Committee.

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# 5. Curriculum and Programs

The 2025 program is divided into Basic, Intermediate, and Advanced tracks, with a total of 80 instructional hours (72 hours regular + 8 hours summer intensive).

- **Subjects**: Introduction to cybersecurity, cryptography, system security, network security, and AI security applications.
- **Special Components**: Cyber ethics, personality development, career exploration, hands-on projects, and field trips.
- **Progression Path**: Students advance from Basic → Intermediate → Advanced (CTF) courses, tailored to middle and high school levels.

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# 6. Key Achievements

- **Field Experience**: Visits to institutions such as the Financial Security Institute and WINS.
- **Competitions**: Operation of CTF competitions using the Dreamhack platform.
- **Academic Research**: Student research papers presented and awarded at national conferences.
- **Bug Bounty Program**: Collaboration with KERIS for vulnerability reporting and remediation, providing students with real-world security experience.

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# 7. Industry and Institutional Collaboration

The center actively collaborates with corporations and public institutions to strengthen educational impact.

- **Partner Organizations**: AhnLab, RaonSecure, Tiori, NuriLab, LSware, among others.
- **Programs**: Character education, cybersecurity ethics courses, career exploration, corporate field trips, and expert lectures.
- **Outcomes**: Students gain practical exposure and career opportunities, while companies benefit from nurturing future talent.

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## 8. Education in the AI Era

The curriculum incorporates AI-related learning to prepare students for emerging cybersecurity challenges.

- **AI Applications**: Use of GPT, Python ML, and cryptographic algorithm implementation.
- **Foundational Knowledge**: Mathematics for cryptography, including number theory and algebra.
- **Practice**: System, network, and software security labs.
- **Career Exposure**: Visits to national cybersecurity agencies and private enterprises.

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## 9. Conclusion and Future Directions

The Institute of Information Security Education for the Gifted has established itself as a critical institution for national cybersecurity talent development. Looking ahead, it aims to:

- **Enhance Curriculum**: Incorporating cutting-edge technologies such as AI, blockchain, and cloud security.
- **Strengthen Industry Collaboration**: Expanding real-world training and career exploration programs.
- **Broaden National Role**: Contributing to national security and competitiveness through the cultivation of future cybersecurity leaders.

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