KIRD NEXT-GENERATION
INTEGRATED EDUCATION PLATFORM,

ALPHA CAMPUS

2022 KIRD Training Programs

Korea Institute of
Human Resources Development
in Science and Technology

KIRD

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2022 KIRD Training Programs

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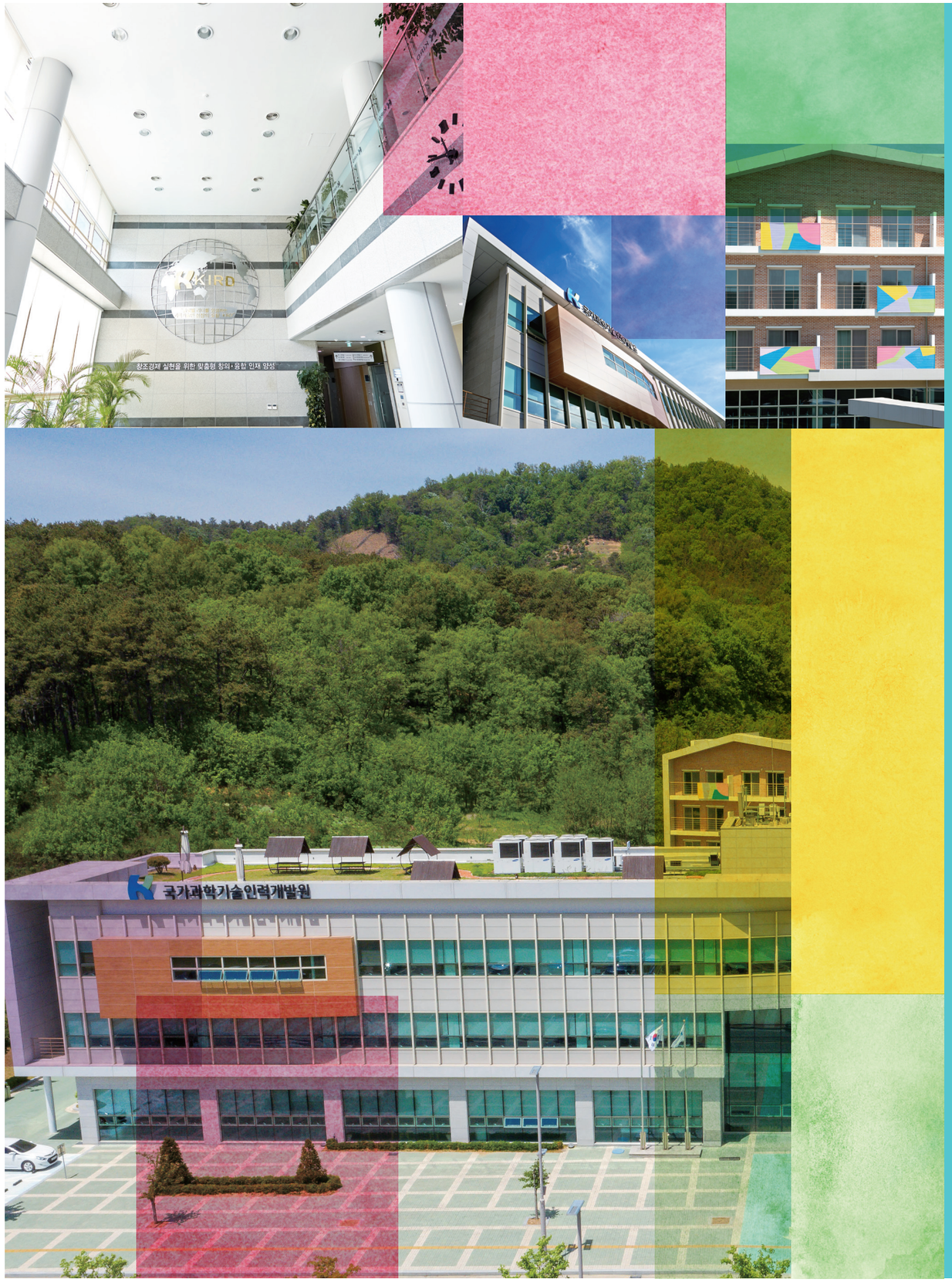

Overview

General Information

History of KIRD

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General Information

Purpose of Establishment

To improve efficiency in national R&D investment through S&T human resources' self-improvement and retraining for transitional innovation

Main Functions

- To develop and execute systematic and efficient training programs for human resources in S&T
- To adjust and maintain connection and cooperation between KIRD training projects and organization related
- To establish training systems for human resources in science and technology, and develop and operate training program database
- To carry on projects commissioned or consigned by the government concerning development and training of human resources in science and technology
- To carry out other fundamental training projects to promote science and technology

History of KIRD

KIRD HISTORY

2007

Nov.
Founded 'Korea Institute of R&DB Human Resource Development' (Daedeok-gu, Daejeon)

2010

Aug. Designated as the educational institution specializing in R&D (ENFORCEMANT REGULATIONS ON MANAGEMENT, ETC. OF NATIONAL RESEARCH AND DEVLEOPMENT PROJECTS, Article 33)

2011

Jul. Designated as the training institution of research ethics (Ministry of Education, Science and Technology)

2013

Aug. Designated as the reskilling institution for government-funded research institutes

2014

Jan.
Renamed to 'Korea Institute of Human Resources Development in Science & Technology (KIRD)'

2015

Jan.
Designated as the institution for technology education and retraining (ENFORCEMENT DECREE OF THE FRAMEWORK ACT ON SCIENCE AND TECHNOLOGY, Article 23)

Aug.
Constructed the headquarter building (in Ochang, Chungcheongbuk-do)

2018

Dec.
Received Learning Service Management System Certification (ISO29990)

2019

Oct.
Launched a career development system for S&T human resources

Dec.
Received Educational Organization Management System Certification (ISO21001)

2020

Apr.
The 5th President, Park Kui-chan inaugurated

Aug.
Developed KIRD brand programs (Digital transformation, Development of Organizational Culture, Research-Biz Simulation, Strategic E-MBA)

2021

Feb.
Established K-LIVE Studio

Jul.
KIRD Human Rights Management Declaration

Sep.
Received Anti - Bribery Management System Certification (ISO34001)

2022 **KIRD** Training Course Programs

Training Programs

In-Class Programs

Online Programs

Competency Model

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In-Class Programs

Overview of In-Class Programs (Off-Line)

Basic Training Programs

Programs to strengthen general/R&D/leadership competency according to the life-cycle of workers'(from newcomers to president) at GRIs and public research institutes

※ Training positions (post-doctoral researchers, student researchers), researchers (assistant, senior, principal, chief), research administration manager, seniors/principal to be promoted, assigned personnel(president, executives, division chiefs, team leaders, training managers), and pre-retirement courses

Professional Training Programs

R&D competency specialized program for researchers and administrative staff from the industrial, academic and research institutes

- **General** : Programs to develop general and basic R&D competency for researchers and administrative staff
- **Research** : Programs to develop professional R&D competency of one's occupational life-cycle* and enhance digital transformation competency

  * Planning, execution·management, and performance spread·evaluation
- **Research Administrator** : Programs to develop specialized R&D competency in research administration field*

  * Planning management, presenting outcomes, budget, finance, purchase, asset, PR, human resources

Specialized Training Programs

Bespoke programs provided according to policy demands or entrusted by external organizations (government, general) other than regular programs

- Entrusted Programs

  Programs received by participating in public offering of external projects to develop specialists or improve competency in a particular field or run according to the request of the organization
- Policy-Oriented Programs

  Programs planned and operated by the national agenda such as national comprehensive plans, laws and policies

In-Class Programs Table

		Pre-Retirement	Career Transition	In-Service: Assigned Personnel	In-Service: Chief	In-Service: Hands-on Level	Pre-Employment
Basic Training	General	LIFE-100 DESIGN (Basic/Advanced)		President, E-MBA, High-Ranking Personnel, Middle-Ranking Personnel (Research/Administration), Training Director	Principals to be promoted	Seniors to be promoted; Newcomers	S&T Human Resources Candidate
	Research				Chief Researcher; Principal Researcher	Senior Researcher; Assistant Researcher; Post-Doctoral Researcher	
	Research Administration				Connect to Professional Training	Research Administration Manager; Workforce to Support Researchers	
Professional Training	General		Self-Designing Career Development	R&D Essential Academy: Research Ethics, Research Security, Research Fund Management, Laboratory Note	Humanities Academy: History and Science Philosophy, Art, Psychology	Communication Academy: Cooperation/Conflict, Managing & Meeting, Reporting	National R&D Real Challenge; Technological Startup Program
				National R&D Project Strategy Program for Leaders; Integrated AI Programs for GRIs; Certification Program for Lecturers			
	Research: Plan, Do, See			Digital Transformation: Basic, Advanced, Professional	R&D Life-Cycle Academy: Project Planning, Writing Proposal, Project Management, Presenting Outcomes	Research Data Analysis Academy: Python, R Programing	How to Write a Research Paper in English
	Research Administration: Planning Management, Presenting Outcomes, Budget·Finance, Purchase·Asset·PR, Human Resources		R&D Manager (Certification Related)	Project Management; Audit Expert; Strategic TLO Training (Basic/Advanced); Budget Planning; Tax Accounting; Science Technology PR; Human Resources Management; Organizational Culture Innovation		Research Administration Overseas Program	
Specialized Training	Entrusted Programs			Space Contractors Human Resources; Research Ethics; Inclusive Growth Program of Competency Enhancement for University Students with Impairments			
	Policy-Oriented Programs			Small and Medium Enterprises Technology; GRIs Startup Business Candidate; R&D Support Coordinator; Disaster and Safety Management; Research Security (Chief/Hands-on level); Cooperative Auditor; Research of Organizational Culture; Objective and Index Setting of National R&D Performance; Understanding GRIs Evaluation; National R&D Project Performance Management & Application		New Programs in Demand ex. S&T Diplomacy Academy, etc.	

Executive MBA (E-MBA)

A process of acquiring business knowledge and know-how through cases of international corporate and excellent research institutes targeted to Government-funded Research Institute(GRI) personnels, board of directors of research institute company, etc.

Target Vice presidents of the organization at GRI or public research institutes

Duration 7 times (1 time a month) / 24 hours

Competency

Professionalism, Communication Skill, Integrated Thinking, Sharing the Vision, Innovation Management, Organization Management, Intellectual Curiosity

Schedule	Module	Courses		Duration
1st	Action Learning & Group Coaching	• Understanding MZ generations as CTO	Lecture/ Case Study/ Discussion	3H
2nd	(Special Session) ESG Business	• Recent trends in Korea and overseas such as the announcement of K-ESG guidelines and cases of excellent companies	Lecture /Discussion	3H
3rd	Leadership and Organization Management	• Organizational design is flexible to environmental change • Personalization, motivation, understanding of relationships	Lecture/ Case Study/ Discussion	4H
4th	Marketing	• Understanding marketing concepts such as marketing communication • Introduction to diverse skills and cases	Discussion	4H
5th	Negotiation and Conflict Management	• Negotiation skills in a diverse situation such as International negotiation, organizing consortium and etc. • Case study, roleplaying, etc.	Lecture/ Case Study/ Discussion	4H
6th	(Special Session) Digital Business Strategy	• Business Strategy using leading technology (AI, Big data, etc.)	Lecture /Discussion	3H
7th	Workshop	• Sharing management issues and current state • Final review and wrap-up session	Lecture /Discussion	3H

Mid-Level Managers

Improve the organizational management ability to deal with issues by including the performance management, organizational management, communication ability, etc.

Target Mid-level managers at GRI or public research institutes

Duration (Short-term) 2 phases(1 night 2 days) / 16 hours
(Long-term) 2 phases(4 times, once every other week) / 16 hours

Competency

Communication Skill, Motivation, Understanding the Organization, Writing Skill, Performance Review

Schedule	Module	Courses		Duration
1st	Millennials' Communication of Smart Leaders	• Networking between mid-level managers • How to communicate with millennials – Situation-specific dialogue method training	Lecture/Practice	4H
2nd	Create a Team Member who Develop Themselves	• Networking between mid-level managers • Delegation of authority to grant autonomy – Effective business division and instruction method – Authority delegation training to reduce risk, etc.	Lecture/Practice	4H
3rd	Evaluation and Feedback	• Networking between mid-level managers • The attitude of the mid-level managers to improve the performance division – Staff performance evaluation method and training that ensure fairness and transparency – Performance evaluation know-how, etc.	Lecture/Practice	4H
4th	Reflective Behavior Leadership of Mid-Level Manager	• Networking between mid-level managers • Understanding the past and present behavior of mid-level managers through questionnaires – Creating and sharing a review note, etc.	Lecture/Practice	4H

Post-Doctoral Researcher

Strengthen the career search and future response capabilities of the post-doctoral research researcher.

Target Post-doctoral researchers at GRI or public research institutes

Duration 2 nights 3 days / 13 hours

Competency

Communication Skill, Teamwork, Integrated Thinking, Self-management, Career Development, Writing Skill, Intellectual Curiosity

Schedule	Module	Courses		Duration
First Day	Networking	• Ice-breaking • Self-introduction	Practice/ Discussion	1.5H
	Career Search	• Understanding the current status of post- doctoral researcher and exploring career paths	Lecture/ Discussion	3H
Second Day	Career Search	• How to write a cover letter and CV	Lecture/ Practice	2H
	Communication	• Communication skill to revitalize the team	Lecture/ Practice	2H
	Future Support	• Insightful innovative technology	Lecture	2H
Third Day	Future Support	• How to respond to Post-COVID era response method	Lecture	2H

S&T Diplomacy Academy

Train national S&T diplomacy and international cooperation specialists who have the same core skills required for S&T diplomacy activities.

Target Workers in S&T and diplomacy field
(Overseas dispatched workers at the science museum, international collaborating researchers, workers related to international cooperation, (under)graduate students in science and engineering field, etc.)

Duration (Domestic) 3 days (non-night) / 18 hours
(Overseas) 7 nights 9 days / 35 hours

Competency

Professionalism, Communication Skill, International Cooperation Project Management,
Policy Direction Framework

Schedule	Module	Courses		Duration
1st	S&T Diplomacy Introduction	• Introduction of S&T diplomatic concept, the current situation in Korea and overseas • Introduction to S&T diplomatic academy	Lecture	1.5H
	Current Status of S&T Diplomacy and International Affairs	• Major countries S&T diplomacy / S&T innovation policy and current situation • Current status of the international situation surrounding Korea • (Main issues on discussion) Korea science and technology diplomacy and development methods	Lecture/ Discussion	3H
	S&T ODA	• Introduction of S&T ODA, case studies of major countries • Current status and development method of Korean S&T ODA	Lecture	2H
2nd	S&T Diplomacy Global Issues	• Major issues such as SDGs, technology hegemony, global health, etc. • Current status of global technical cooperation on the latest issues	Lecture	1.5H
	S&T field Current Status of International Organizations	• Introduction to major international organizations and Korea's multilateral diplomatic strategy • International organization governance, agenda, and Korean activity • (Discussion) Participation in international organizations and utilization	Lecture/ Discussion	1.5H
	S&T Diplomacy Case Study	• Cases of international cooperation in S&T • S&T examples in diplomatic activities	Lecture/ Case study	2H
	S&T Diplomatic Practice	• Public office value and diplomatic ethics • Global manners, cultural understanding, and diplomatic practice know-how	Lecture	1.5H
3rd	S&T Diplomacy Negotiation Skill	• S&T diplomatic negotiations·communication, know-how of international conferences • Role-playing related to negotiation and communication	Lecture/ Practice	2H
	S&T Diplomacy Skill-Up Workshop	• (Workshop) S&T diplomacy and international cooperation virtual scenario team workshop	Discussion/ Coaching	3H
4th	Overseas Training	• Visit to foreign S&T and diplomatic organizations • S&T diplomatic field training and future agenda derivation	Lecture/ Case study	35H

Digital Transformation Mind-up

Derive administrative efficiency measures through case study of success and failure of digital transformation.

Target Workers in charge of research administration industry-university-research Institute in S&T field

Duration 1 day / 5 hours

Competency

Information Analysis Skill, Statistical Analysis Skill, Developing a Research Strategy, Writing a Research Report

Schedule	Module	Courses		Duration
First Day	The Necessity and Case of Digital Transformation	• Meaning of digital transformation and current state • Importance of digital transformation • Changes in working methods	Lecture	2H
	Establishing a Digital Transformation Strategy	• Success/failure cases of digital transformation • Examples of administrative efficiency	Case Study/ Demonstration	3H

Research Field Machine Learning/ Deep Learning Application Courses

Apply AI to actual research, grasp trends in the field, and prepare for the current application by AI expert consulting.

Target Researchers at industry-university-research Institute

Duration 3 days (non-night) / 16 hours

Competency

Information Analysis Skill, Statistical Analysis Skill, Developing a Research Strategy, Writing a Research Report

Schedule	Module	Courses		Duration
First Day	Trends in Research Field	• Recent domestic and overseas situation • Future prospects	Lecture/ Case Study	2H
	Case Analysis	• Introduction to data application algorithm • Progress of case-based practice	Case Study/ Practice	4H
Second Day	Current Status of Data Utilization in Industry	• Current status of representative companies in Korea and overseas • Current implication of machine learning/deep learning application	Lecture	2H
	Preparations to Learning Transfer on the Job	• Artificial intelligence application flow chart • Definition of the research subject's problem	Lecture/ Consulting	4H
Third Day	Preparation for Actual Business	• Full consulting from data preprocessing, collection, to algorithm application	Consulting	4H

Research Data Analysis Academy (Python Basic)

Learn the basic functions of Python and use Python to write research papers and visualize research data.

Target Researchers at industry-university-research institute

Duration 4 times (1 time a week)/ 22 hours

Competency

Information Analysis Skill, Statistical Analysis Skill, Writing a Research Report, Risk Management in Research

Schedule	Module	Courses			Duration
1st	Data Visualization	Overview of Data Visualization	• Importance of data visualization and frequent errors	Lecture	5.5H
		Python Basics	• Installing Python and learning basic coding	Practice	
2nd		Data Preprocessing and Library Installation	• Introduction of data preprocessing method • Understanding how to install and use Python packages (such as Numpy)	Practice	5.5H
3rd		Data Visualization Practices	• Drawing bar charts using Pandas • Drawing object-oriented functions using Matplotlib	Practice	5.5H
4th		Data Visualization Practicum	• Color bar drawing using seabone • Data visualization practices	Practice	5.5H

Research Data Analysis Academy (Python Advanced)

Learn the basic concepts of machine learning/deep learning and improve your ability to utilize Python-based machine learning/deep learning.

Target Researchers at industry-university-research institute

Duration 4 times (1 time a week)/ 22 hours

Competency

Information Analysis Skill, Statistical Analysis Skill, Writing a Research Report, Risk Management in Research

Schedule	Module	Courses			Duration
1st	Machine Learning/ Deep Learning	Understanding Machine Learning	• Machine learning/deep learning achievement cases	Case Study	5.5H
		Understanding Basics of Machine Learning	• Understanding of supervised/non-supervised learning • Introduction and installation of the main library	Lecture/ Practice	
2nd		Supervised Learning	• Cost function and gradient descent • Basic Statistical Theory (Linear Regression, Logistic Regression, SVM)	Practice	5.5H
3rd		Non-Supervised Learning	• Understanding and practicing non-supervised learning algorithms	Practice	5.5H
4th		Deep Learning	• Understanding and practicing deep learning	Practice	5.5H

Research Data Analysis Academy (R Basic)

Utilize programs such as Jamovi and R to improve the basic statistical analysis skills required for research papers.

Target Researchers at industry-university-research institute

Duration 4 times (1 time a week)/ 22 hours

Competency

Information Analysis Skill, Statistical Analysis Skill, Writing a Research Report, Risk Management in Research

Schedule	Module		Courses		Duration
1st	Statistical Basic	Installation of R/Jamoby	• Understanding and installing R, Jamoby	Practice	5.5H
		Basic Statistics	• Basic Statistics and Data Visualization Basics • Data preprocessing	Practice	
2nd		Basic Statistics and Hypothesis Testing	• Statistical inference • One sample population mean • Independent two-sample t-test, etc.	Practice	5.5H
3rd		Correlation and Regression Analysis	• Covariance and correlation coefficient • Correlation coefficient inference • Simple regression	Practice	5.5H
4th		Design of Experiments	• AOV function • Hypothesis and hypothesis test	Practice	5.5H

Research Data Analysis Academy (R Advanced)

Master big data statistical tools through learning how to use statistical analysis in research databases.

Target Researchers at industry-university-research institute

Duration 4 times (1 time a week)/ 22 hours

Competency

Information Analysis Skill, Statistical Analysis Skill, Writing a Research Report, Risk Management in Research

Schedule	Module		Courses		Duration
1st	Advanced Statistics and Visualizing Data	Advanced Data Preprocessing Null Hypothesis and Testing Review	• Data preprocessing method • How to handle missing values • Review of null hypothesis, alternative hypothesis, etc.	Practice	5.5H
2nd		Logistic Regression	• Binomial logistic regression • Multinomial logistic regression	Practice	5.5H
3rd		Advanced Statistical Analysis	• Network analysis • Decision making tree • Random forest, etc.	Practice	5.5H
4th		Data Visualization	• R/Jamovi-based data visualization training	Practice	5.5H

Strategic TLO Training Basic

Understand the role of TLOs and process of IP-R&D.

Target Beginner TLO (Within 3 years of employment)

Duration 2 days

Competency

Professionalism, Moral Consciousness, Planning Skill, Performance Analysis, Performance Creation Management, Start-up·Transfer and Post-Care

Schedule	Module	Courses		Duration
First Day	Understanding the Role of TLO	• The role of TLO'S in GRIs • IP-R&D life-cycle process	Lecture/ Case Study	2H
	IP creation/ Management	• Technological analysis·evaluation and trend analysis	Lecture	2H
		• IP creation·management strategy : Cases of GRIs	Lecture/ Case Study	3H
Second Day	Technology Transfer	• Basics of technology transfer	Lecture	1.5H
		• Understanding technology transfer marketing process	Lecture/ Case Study	1.5H
	Start-Up Support	• Understanding the domestic start-up support process • Understanding technology investment • Success/Failure cases of technology industrialization	Lecture/ Case Study	2H
		• Understanding post-management tax technology transfer	Lecture	2H

Strategic TLO Training Advanced

Understand advanced contents for technological transfer·startup support.

Target Experienced TLO (From 3 years of employment)

Duration 4 times (once every other week)

Competency

Professionalism, Moral Consciousness, Planning Skill, Performance Analysis, Performance Creation Management, Start-up·Transfer and Post-Care

Schedule	Module	Courses		Duration
1st	Business Model	• The importance of understanding BM	Lecture/ Case Study	4H
		• Know-how of IP portfolio	Lecture/ Case Study	2H
2nd	Reacting to Conflicts over Technology Transfer	• Domestic·international technology transfer dispute examples	Lecture/ Case Study	2H
		• Reacting to dispute of technology transfer	Lecture	4H
3rd	Technology Transfer Negotiation	• Theory of technology transfer negotiation • Technology transfer negotiation cases and strategy	Lecture/ Case Study	2H
		• Technology transfer negotiation practice·writing contracts	Practice	4H
4th	Start-up Support	• Cases of start-up support : GRIs-focused	Lecture	2H
		• Know-how enterprise institute operation·management	Lecture/ Case Study	2H
		• Enterprise institute investment payback strategy	Lecture	2H

Organizational Culture Innovation

Understand organizational culture concerns, seek strategic solutions, and establish the pathway to an organizational culture innovation for optimal research and derivation.

Target Managers or Hands-on level related to organizational culture at the organization at GRI or public research organizations

Duration 3 times (once every other week)/ 18 hours

Competency

Planning Skill, HR Planning, Education&Training

Schedule	Module	Courses		Duration
1st	Trends on Organizational Culture	• Changes in working environment related to COVID-19 and emerging MZ generation, etc. • Changes in organizational and cultural innovation trends	Lecture/ Case Study	2H
	Discussion on GRI Issues	• Organizational culture personnel discussion • Discuss GRIs' organizational cultural issues	Case Study/ Discussion	2H
2nd	Concept of Organizational Culture	• The concept and importance of organizational culture • Building organizational culture diagnostic methods and directions	Lecture/ Case Study	2H
	Organizational Culture Diagnosis	• Search on diagnostic techniques to activate GRIs' organizational culture • Sharing of cases of organizational culture diagnosis in other organizations	Lecture/ Case Study	2H
3rd	Workshop	• Search for cases of cultural innovation in Korea and overseas research institutes and corporate organizations • Sharing of operational cases by organizational culture personnel • Establishing action plan to solve problems on organizational culture	Exploration/ Discussion/ Networking	10H

Research Ethics

Raise ethical awareness and create a responsible research environment through bespoke education.

Target Researchers at universities and public research institutes, research ethics practitioners, specialized lecturers

Duration To be announced

Competency

Professionalism, Responsibility, Moral Consciousness, Problem-Solving Skill, Information Analysis Skill, Insight

Module	Courses			Duration
Research Ethics		• Need for research ethics • Types and cases of research misconducts • Conflict types and prevention • Types and standards of publishing ethics • Researcher's social responsibility • Bioethics and related laws and regulations • Understanding the operation of the Institutional Review Board (IRB)	Lecture	3H
Research Ethics Practitioner	Research Integrity	• Regulations and systems of research ethics • Types and cases of research misconduct • Procedures and examples of the Research Integrity Committee • Research integrity committee verification procedure practium	Lecture/ Practice	17H
	IRB	• Understanding IRB management and evaluation certification system • IRB deliberation procedures and operational practices • Revision of standard operating guidelines and document management	Lecture/ Discussion	11H
Research Ethics Expert		• Understanding research ethics and research misconduct • Research ethics law and system • Recent trends and issues on research ethics/IRB • Understanding bioethics and the role and deliberation method of IRB • Concepts and processes of instructional design • Writing research ethic lesson plan and micro-teaching, etc.	Lecture/ Practice/ Discussion	30H

Disaster and Safety Management

Acquire basic knowledge such as laws and systems necessary for carrying out disaster and safety management work, and strengthen response capabilities by understanding missions and roles.

Target Disaster safety personnels at GRI and public research institute

Duration To be announced

Competency

Professionalism, Moral Consciousness

Schedule	Module	Courses		Duration
First Day	Understanding of Disaster Management	• Understanding the fundamental laws of disaster and safety management • Understanding the disaster situation management system	Lecture/ Discussion	3H
	Cases of Disaster Management	• Recent disaster occurring trends • Major disaster cases and takeaways in domestic and overseas	Lecture/ Discussion	4H
Second Day	Disaster & Safety Practice	• Writing a disaster status report • Writing and operating crisis management manual	Lecture/ Discussion/ Practice	3H
	Disaster Safety Experience	• Disaster safety experience practicum • Disaster response cases and solutions	Field Trip/ Practice	4H

Research Institute's Organizational Culture Development

Present the organization's emotional understanding and organizational activation plans of the research institute's members, and strengthen the ability to execute organizational culture improvement.

Target Members at industry-university-research institute

Duration To be discussed with applicant organization

Competency

Responsibility, Creativity, Teamwork, Communication Skill , Motivation, Sharing & Presenting Vision, Achievement Orientation, Innovation Management, Organization Management, Understanding the Organization

Section	Module	Courses		Duration
Common (Mandatory)	Organizational Culture	• Understanding our organization and GRIs' organizational culture • The meaning and importance of organizational culture • How to change your organizational culture	Lecture/ Case Study	2H
	Autonomy and Responsibility	• GRIs' autonomous and responsible organizational culture • Analyzing exploring best cases	Lecture/ Case Study	2H
Bespoke (Optional)	Innovative Organization (Innovation-Oriented)	• Three elements of the innovative organization • Creating a culture of creation, cooperation and innovation	Lecture/ Case Study	2H-4H
	Collaboration and Communication (Relationship-Oriented)	• Understanding my communication type • Roleplaying in conflict situation • Communication skill for cooperation	Practice	2H-4H
	Productivity (Market-Oriented)	• How a productive organization works • Research management process to increase productivity • Improving working style to improve productivity	Lecture/ Case Study	2H
	Pride	• Empowering change motivation and increasing self-esteem thorugh positive self-awareness • Discover potential in terms of positivity, immersion, relationships, meaning and achievement	Lecture/ Case Study	2H

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2022 KIRD Training Programs

Online Programs

Overview of Online Programs

E-Learning

Basic Programs (17 courses)

- General/Leadership competency program targeted from post-doctoral to retirees according to the career path.

Professional Programs (123 courses)

- Specialized & basic R&D competency and R&D life-cycle/research administrative development training.

Specialized Programs (19 courses)

- Entrusted and policy-demanded programs to foster specialized personnels in specific fields and develop competency.

4th Industrial Revolution Cyber Forum

Interactive content programs related to up-to-date social change and S&T trends targeted to the public formed in three areas (social transformation/technology revolution/policy system). Total of 161 sessions.

Micro-Learning Contents

More than 10,000 leading knowledge resources that reflect the demand of research site and the latest trends, consisting of topics such as leadership, humanities & literacy, occupation·innovation in video, e-book, and text formats.

Online Programs Table

			Learning Contents and Platform	
			Learning Contents	
Basic Training	General		Scientific Thinking Why is Empathy Important to S&T Human Resources? Scientific View of Humanities Self-Control Strategy Understanding Business and Human Rights Robot·AI Ethics	Aesthetics in Science Global Leader Strategic Performance and Change Management Interdisciplinary Research Keywords in 21st Century ...
Professional Training	Specialized	Common	R&D Life-Cycle	Pre-Educational Program for Experienced Scientist and Engineers in Career Transition
		Research Ethics	Academic Ethics for Undergraduate Students	Research Ethics related to Science for the Gifted
		Laboratory Safety	Laboratory Safety Machine	Laboratory Safety Manager
		Research Security	Research Security Management	Research Security Management
		Laboratory Note	Laboratory Note	Laboratory Note
		Research Fund Management	Research Contract and Research Fund Management	Users of Research Fund Integrated Management System
		Others	Ethic Management	CS Program for GRIs
	Research	Plan	R&D Planning Research Subject Validation Analysis Understanding R&D Policy and Practice Market Research Analysis	Patent Analysis Future Forecasting Writing R&D Project Proposal -
		Do	Problem-Solving in a Creative Way R&D Project Management Research Data Analysis (R) Research Data Analysis (Statistics)	Research Data Analysis(Excel) Understanding Patent Description How to Write a Research Paper in English ...
		See	Technology Marketing R&D Presenting Outcomes	Technology Value Evaluation ...
Specialized Training	Research Administration		S&T Human Resources Media Communication Competency Flipped Learning Ethics and Management of National Research Facilities' Equipment Audit/Budget Management Research Project Management Organizational Cultural Development	
	Entrusted Programs		Understanding Evaluation SAR Payload/Satellite Attitude Control -	
	Policy-demand Programs		Preventing Human Rights Violation Start-Up Business of S&T Human Resources/ Employment Competency Performance Evaluation (Basic/Practice) Performance Objective and Index Setting	

R&D Guideline to Conduct Proper Research

To acquire key issues to learn and react while conducting R&D such as laboratory security, research security, research ethics, research fund management.

Target Learner
Researcher and research manager in science and technology field

Duration 1month

Learning hour 1hour

Qualification for Completion
More than 90% of course progression, Survey Required

Periods	Title
1	Planning Research
2	Practicing Objective Research Experiment!
3	Analyzing Data in an Easy and Effective Way
4	Writing Research Paper from Basic to Practice!
5	Keep Research Ethics in Mind
6	Make Good Use of Research Notes

Research Ethics for Graduate Students

To enhance research ethics and foster a responsible research culture through understanding diverse cases about research misconduct when conducting research.

Target Learner
Graduate students in R&D field

Duration 1month

Learning hour 3hours

Qualification for Completion
More than 90% of course progression, Survey Required

Periods	Title
1	Social Responsibility
2	Research Data
3	Publication Ethics
4	Research Misconduct
5	Research Community
6	Bioethics

Research Ethics for Researchers

To enhance research ethics and foster a responsible research culture through understanding diverse cases about research misconducts and inappropriate behavior when conducting research.

Target Learner
Researchers participating in national R&D projects and Academic Research Capacity Enhancement program in National Research Foundation of Korea

Duration 1month

Learning hour 3hours

Qualification for Completion
More than 90% of course progression, Survey Required

Periods	Title
1	Social Responsibility
2	Research Data
3	Publication Ethics
4	Research Misconduct
5	Research Community
6	Bioethics

Research Ethics for Research Managers

To enhance research ethics and foster a responsible research culture through understanding diverse cases about research misconduct and inappropriate behavior when conducting research.

Target Learner
Research managers participating in national R&D projects and joined in National Research Foundation of Korea's Academic Research Capacity Enhancement program

Duration 1month

Learning hour 3hours

Qualification for Completion
More than 90% of course progression, Survey Required

Periods	Title
1	Social Responsibility
2	Research Data
3	Publication Ethics
4	Research Misconduct
5	Research Community
6	Bioethics

Lab Safety-Gas

To understand the characteristics of the gases used in the laboratory and identify the hazards based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60 points, Survey Required

Periods	Title
1	Overview of Gases
2	Gas Cylinder Maintenance and Storage
3	Management of Toxic and Ultra-Low Temperature Gas
4	How to Prevent Gas Accidents

Lab Safety-Machines

To identify the main causes of laboratory machine-related accidents and learn about safety management of machinery based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Safety Management of Machinery Tools
2	Safety Management of Other Machinery Tools

Lab Safety-Radiation·Laser

To understand the safety and basic concepts of experimental safety in the field of radiation and laser based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Radiation Safety for Experiments
2	Laser Safety for Experiments
3	Laser Accident Cases and Accident Response
4	Safety Control through Case Studies on Radiation Accidents

Lab Safety-Health·Environment

To identify health hazards and characteristics of the laboratory, and learn about health check-ups for research workers based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Creating a Healthy Research Environment
2	Health Examination of Lab workers

Lab Safety-Biology

To understand the concept of biosafety and learn the basics of laboratory biosafety based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Safety Basics of Biology Experiments
2	Biological Risk Assessment and Understanding Safety Ratings
3	Medical Waste Management and Disposal
4	Animal Experiment Safety

Lab Safety-Firefighting

Understand the basics of firefighting safety and learn the prevention measures for each cause of laboratory fires based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Basic Theory of Fire Safety
2	Types and Usage of Fire Extinguishers

Lab Safety-Practical Training

To identify the types of hazardous factors for each laboratory and recognize the harmfulness based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	How to Utilize Personal Safety Devices in the Lab
2	First Aid and its Practice

Lab Safety-Safety Before After the Experiment

To prevent accidents by learning basic safety rules before and after the experiment based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Safety Issues Before·After the Experiment I
2	Safety Issues Before·After the Experiment II

Lab Safety-Safety Management(Basic)

To enhance researchers' establishment of the safe laboratory environment and safety awareness based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month

Learning hour 2hours

Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Safety Management of Low-Risk Labs
2	Lab Earthquake Response Manual
3	Basics of Laboratory Safety Management in Animation
4	Cases of Laboratory Accidents and the Preventive Measures

Lab Safety-Safety Management Practice I

To learn about safety management in each subject and research field based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month

Learning hour 2hours

Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Laboratory Safety Management Instructions for Company-Affiliated Research Centers
2	Safety Management of the Laboratory for Medical Researchers
3	Basic Safety Management for Women Scientists I
4	Basic Safety Management for Women scientists II

Lab Safety-Safety Management Practice II

To learn about safety management that requires attention in the actual field, such as characteristics of dangerous substances and precaution based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month

Learning hour 2hours

Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Precautions for Handling Hazardous Equipment in the Laboratory
2	Classification and Handling Management by Chemical Characteristics I
3	Classification and Handling Management by Chemical Characteristics II
4	How to Use Evacuation Equipment in an Emergency

Lab Safety-Safety Awareness

To increase the safety awareness of researchers and understand the basic safety rules to be observed in the laboratory based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month

Learning hour 2hours

Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Major Contents of the Act on the Establishment of a Safe Laboratory Environment
2	Why Do Accidents Happen in a Laboratory
3	Safety & Ergonomics
4	Basic Laboratory Safety Regulations

Lab Safety-Research Lab Accidents I

To learn the way how to minimize the accident occurrence and damage through laboratory safety accident cases based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Cases of Laboratory Safety Accidents I (Chemistry/Gas/Biology field)
2	Cases of Laboratory Safety Accidents II (Electricity/Machinery/Radiation field)
3	Cases of Laboratory Safety Accidents III (The current status of safety accidents in labs and accidents)

Lab Safety-Research Lab Accidents II

To understand appropriate countermeasures in case of a laboratory accident based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Responses and First Aid by Accident Categories
2	Accident Insurance Procedures

Lab Safety-Electricity

To recognize the risk factors in the laboratory in the electric field and understand measures to prevent safety accidents based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Prevention of Electric Accidents
2	Electrical Fires
3	Electric Shock Cases and First Aid
4	Cause of Electric Fires and Preventive Measures

Lab Safety-The Roles of Laboratory Directors

To understand the role of the person in charge of the laboratory and be aware of the safety of the laboratory based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	The Roles of Laboratory Directors
2	Laboratory Precision Safety Diagnosis
3	Pre-Risk Factor Safety Analysis and R&DSA Writing Cases
4	Function and Organization of Laboratory Safety Management Committee

Lab Safety-The Roles of Laboratory Managers

To understand the role of the safe laboratory environment manager and learn how to apply the practice based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 1hour
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Understanding the Roles of Safe Laboratory Environment Manager
2	Major contents about 'Act on the Establish of Safe Laboratory Environment'

Lab Safety-LMO(Living Modified Organism) Biosafety

To understand the definition of the LMO research facility, identify and apply requirements for establishment and operation of research facilities based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Understanding the LMO Act and Regulations on Research and Development: Basics
2	Understanding the LMO Act and Regulations on Research and Development: Handling Management
3	Safety Management of LMO Research Facilities: General
4	Safety Management of LMO Research Facilities: Animals

Lab Safety-Chemistry

To understand basic knowledge and chemicals for safe chemical experiments based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 4hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Chemical Protective Equipment and Experiment Equipment
2	Understanding the Types of Chemical Substances and GHS/MSDS
3	Storage and Handling of Chemical Substances
4	Management and Disposal of Chemical Substances

Periods	Title
5	Chemical Safety Legislations in the Lab
6	Cases and Responses to Chemical Accidents I
7	Cases and Responses to Chemical Accidents II
8	Human and Environmental Impact of Chemicals

Lab Safety-Preliminary Risk Analysis of Hazard Factors

To understand the implementation of preliminary risk analysis of hazard factors based on 'ACT ON THE ESTABLISHMENT OF SAFE LABORATORY ENVIRONMENT.'

Target Learner
Lab Researcher in R&D field

Duration 1month
Learning hour 2hours
Qualification for Completion
100% of course progression,
Exam score more than 60, Survey Required

Periods	Title
1	Guideline to Implementing Preliminary Risk Analysis of Hazard Factors in Laboratory
2	Current Status of Safe Laboratory
3	Formulation Risk Hazard Factors in Each Research Development Activity
4	Safe Analysis of Research Development Activity

Laboratory Note

To learn about the research note guidelines newly implemented with the enactment and enforcement of the R&D Innovation Act, and write laboratory notebook by observing the importance, requirements, and preparation methods of laboratory note.

Target Learner

Researchers participating in national R&D projects (including graduate students)

Duration 1month

Learning hour 1hour

Qualification for Completion

More than 90% of course progression, Survey Required

Periods	Title
1	The Necessity of Laboratory Note
2	Everything about E-Laboratory Note
3	Laboratory Notebooks Preparation
4	Utilization of Laboratory Note

Competency Model

Competency Model for S&T Human Resources

Organization of Competency Model for S&T Human Resources

Competency Cluster

Classified as 3 competency groups of General, R&D, and Leadership

+

Job Description

Classified into Research, Research Administration, and Research Management

+

Career Classification

Defined as responsibility-based assingned personnel (executive), chief(manager), hands-on level, and S&T human resources candidate

Competency for S&T Human Resources

General competency

Eight essential areas that all S&T human resources must possess

R&D competency

Total of 72 competencies comprised of 9 basic competencies required for performing R&D regardless of job typology, and 63 specialized areas of competencies for Research, Research Administration, Research Management roles

Leadership competency

15 competencies necessary to perform one's role by career level such as Assigned Personnel, Chief, Hands-on Level, S&T Human Resources Candidate

Competency Cluster

General	Competencies that S&T human resources must possess in common regardless of their occupation
R&D	Specialized Competencies by job classification (Research/Research Administration /Research Management
Leadership	Competency necessary for the performance of roles for each career level according to the job responsibilities (Upper Management/ Director/Hands-on level/S&T Human Resources Candidate

Job Description

Research	A person who performs R&D projects under industrial-academic-research institutes (Scope) Researchers and engineers at government-funded research institutes(GRIs), public research institutes, corporate R&D centers, or full-time professors at a university, etc.
Research Administration	A person in charge of research administration, such as contracts, budgets, and HR under industrial-academic-research institutes (Scope) Administrative workers at GRIs, public research institutes, R&D management agencies, industry-academic cooperation foundations, etc.
Research Management	A person who plans, manages and evaluates national R&D projects under a R&D management institute (Scope) PM or a person in charge of R&D management institutes, etc.

Career Classification

Assigned Personnel (Executive)	A person appointed as a director of a team/division/department
Chief (Manager)	The person in charge of the research project or the manager of research project administration(support) ※ If a person who is a former and currently a chief or manager, he/she is regarded as a chief(manager)
Hands-on Level	Research project participants or a person in charge of research administration work
S&T Human Resources Candidate	Undergraduate or graduate researchers interested in working in S&T field

Competency Model for S&T Human Resources

Competency	Section			Competency Classification						
General Competency (8)				Professionalism	Responsibility	Communication Skill	Performance Oriented	Creativity	Teamwork	Integrated Thinking	Moral Consciousness
R&D Competency (72)	Basic Competency (9)			Information Analysis Skill	Writing Skill	Statistical Analysis Skill	Planning Skill	Leading Performance	Intellectual Curiosity	Strategic Thinking	Insight	Resources Management Skill
	Professional Competency (63)	Research (17)	Research Plan (Plan)	S&T Policy Analysis	R&D Trend Analysis	In-Demand Technology Analysis	Writing a Project Plan	Project Feasibility Analysis	Planning a Research Strategy	Planning a Performance Implementation Plan	Planning a Technology Road-Map	
			Performance·Management (Do)	Writing a Research Report	Schedule Management in Research	Project Resources Management in Research	Risk Management in Research					
			Performance Evaluation (See)	Response to Performance Evaluation	Evaluation Feedback	Technology Value Evaluation	Technology Marketing	Technology Commercialization				
		Research Administration (29)	Management Plan	Developing Management Strategy	International Cooperation Project Management	Selection & Agreement of Research Project	Research Project Execution Management	Response to R&D Performance Evaluation				
			Presenting Outcomes	Performance Analysis	Performance Creation Management	Start-Up·Transfer & Follow-up						
			Budget ·Finance	Developing a Budget Strategy	Budget Executive Management	Accounting Management	Settlement Management	Tax Management				
			Purchase ·Asset ·PR	Acquisition· Disposal of Assets	Purchase Quality Control	Developing Purchase Strategy	Cost of Good Sold (COGS) Management	Purchase Agreement	Order Management	Developing a PR Plan	PR· Event Management	
			Human Resources	HR Planning	Recruitment	Performance Review	Education & Training	Payroll Management	Welfare	Labor Management	Retirement Management	
		Research Management (17)	Planning	Policy Direction Framework	Project Planning	Project Feasibility Analysis	Technology Trend Analysis	Developing a Resource Allocation Plan	Writing a Request for Proposal	Organizing & Managing Evaluator		
			Project Management	Project Announcement & Assessment	Contract Management	Project Progress Control & Field Inspection	Research Evaluation	R&D Expense Settlement				
			Presenting Outcomes	Developing a Performance Implementation Plan	Research Performance Implementation Analysis	Research Performance Management	Technology Transfer· Commercialization Support	System Improvement & Legislation				
Leadership Competency (15)	Assigned Personnel(Executive)			Sharing Vision	Innovation Management	Organization Management	Rational Decision-Making					
	Chief(Manager)			Goal Management	Change Management	Motivation	Delegation of Authority					
	Hands-on-Level			Self-Management	Leading by Example	Cooperation	Understanding the Organization					
	S&T Human Resources Candidate			Self-Directed Learning	Problem-Solving Skill	Career Development						

Definition of Competency for S&T Human Resources

General competency(8)

Type of Competency	Competency Code	Definition
Professionalism	C1	To expand expertise and skills and apply them to work through continuous self-development of one's work.
Responsibility	C2	To recognize the authority and duty for the work and take the initiative to complete the work.
Communication Skill	C3	To collect and coordinate mutual opinions by actively listening to others' opinions and by logically explaining one's point of view.
Performance-Oriented	C4	To set a higher level of challenging goals than the standard and passionately strive to achieve them to create the best results.
Creativity	C5	To propose an idea and a method from various perspectives and give shape to utilize it.
Teamwork	C6	To create synergy by making a cooperative atmosphere to achieve a common goal.
Integrated Thinking	C7	To create new value by organically integrating knowledge and technology in various field.
Moral Consciousness	C8	To perform its work fairly and transparently in compliance with related laws such as basic norms and academic ethics expected by the society and organizations.

R&D competency(72)

Section	Type of Competency	Competency Code	Definition
Basic Competency	Information Analysis Skill	RF1	To collect and analyze information in various views, and interpret relevantly.
	Writing Skill	RF2	To organize logically according to the purpose of the document and write readable document by reviewing and complementing.
	Statistical Analysis Skill	RF3	To derive and utilize statistical results by using collected data with appropriate statistical analysis techniques and methods.
	Planning Skill	RF4	To derive goals and strategies through new ideas and establishing specific action plans.
	Leading Performance	RF5	To secure necessary resources, take the initiative in carrying out work and establish a cooperative system to finish within the deadline.
	Intellectual Curiosity	RF6	To have attention to various situations and problems and strive to obtain information as well as expand new knowledge.
	Strategic Thinking	RF7	To identify key issues that meet the goals and seek optimal solutions considering environmental changes and priorities.
	Insight	RF8	To draw a reasonable conclusion by using accumulated knowledge and experience and set logical criteria for problem-solving.
	Resources Management Skill	RF9	To efficiently allocate and utilize resources (people, budget, schedule, etc.) according to goals and standards by identifying and securing the resources necessary for business performance.

Section		Type of Competency	Competency Code	Definition
Professional Competency [Research]	Research Plan (Plan)	S&T Policy Analysis	RR1	To analyze the flow and direction of national and overseas' S&T policies and research projects, and predict the future direction of government policies and S&T-related projects.
		R&D Trend Analysis	RR2	To analyze R&D trends and advanced technologies by collecting information through national and overseas' academic data.
		In-Demand Technology Analysis	RR3	To seek and apply analysis methodologies optimized for technology and market characteristics, and establish measures to develop technologies (products) by reflecting customer needs.
		Writing a Project Plan	RR4	To note a project plan by setting research goals and directions and establishing detailed implementation plans.
		Project Feasibility Analysis	RR5	To analyze the validity through economic, social, technological and legal point of view related to the research topic.
		Planning a Research Strategy	RR6	To derive strategic alternatives based on internal and external environment analysis and select optimal research strategies to achieve research goals.
		Planning a Performance Implementation Plan	RR7	To investigate the current status of national and overseas' markets and technology competition trends to utilize R&D results and establish measures to spread research results such as technology transfer.
		Planning a Technology Road-Map	RR8	To set goals for technology development to meet future market and customer needs and present technological alternatives and R&D road-maps necessary to achieve them.
	Performance· Management (Do)	Writing a Research Report	RR9	To prepare clearly and concisely based on reliable data to effectively express the research results.
		Schedule Management in Research	RR10	To plan a progressed schedule for each research stage in consideration of the priority of research performance, etc. and manage the progress of each stage.
		Project Resources Management in Research	RR11	To utilize HR and manage research equipment, facilities, and R&D expenses efficiently.
		Risk Management in Research	RR12	To accurately identify the causes, constraints and effects of problems expected and various problems that occur during research, seek countermeasures, and deal with research risks.
	Presenting Outcome Evaluation (See)	Response to Performance Evaluation	RR13	To effectively create, demonstrate, and present project execution results (performance) based on the understanding of evaluation index and performance criteria for R&D projects.
		Evaluation Feedback	RR14	To derive improvement of the research performance's evaluation result, resetting the goals, and reflecting them in future projects and research.
		Technology Value Evaluation	RR15	To embody the performance created by anticipating objective evidence and future value, and evaluate science, technology, economic, and social value.
		Technology Marketing	RR16	To support technology public relations activities to discover promising technologies, searching for consumers, and activating transactions.
		Technology Commercialization	RR17	To be selected based on the verification results of market demand analysis, and promoted technology transfer and technology start-up.

Section		Type of Competency	Competency Code	Definition
Professional Competency [Research Administraion]	Management Plan	Developing Management Strategy	RA1	To set med- to long-term development goals for the organization by analyzing the business environment, and establish detailed execution plan.
		International Cooperation Project Management	RA2	To plan and manage cooperation projects by discovering cooperative organizations and singing MoU to strengthen the global network and research capabilities.
		Selection & Agreement of Research Project	RA3	To verify the validity research project to select and examine the project proposal. It also concludes and manages the contract.
		Research Project Execution Management	RA4	To manage research expenses, progress, security, and outcomes and audit research projects by registering research projects.
		Response to R&D Performance Evaluation	RA5	To formulate plans, conduct evaluating, and reflect the evaluation results In order to evaluate the performance of R&D.
	Presenting Outcomes	Performance Analysis	RA6	To set the performance objective to measure the qualitative level of the research performance, reflecting the characteristics of the research form and field and perform The performance survey, collection and analysis.
		Performance Creation Management	RA7	To register and manage intellectual property rights obtained through research and development. It also carries out technology start-up and transfers operations that create technological achievements as economic achievements.
		Start-Up Transfer & Follow-up	RA8	To sustainably monitor and support to succeed in commercialization, and manage shareholder rights exercise, exit, and revenue distribution.
	Budget· Finance	Developing a Budget Strategy	RA9	To establish a strategic budget securing plan for achieving management goals, formulate an appropriate budget for each business unit, and develop a comprehensive budget plan.
		Budget Executive Management	RA10	To analyze the outcome compared to the plan through regular and occasional budget execution status inspection for management decision-making, and establish a countermeasures. It also adjusts and manages the budget to a feasible budget.
		Accounting Management	RA11	To keep track of accounting transactions, prepare relevant resolutions, and process and manage documents.
		Settlement Management	RA12	To measure and evaluate assets, debts, and capital, fix income and expenses for the accounting period, check the performance and establish a strategy for dealing with external settlement through completing and writing reports on accounts.
		Tax Management	RA13	To carry out practical work such as income and tax calculation for tax authority payment, tax calculation and payment for managing additional tax, etc.

Section		Type of Competency	Competency Code	Definition
Professional Competency [Research Administraion]	Purchase·Asset·PR	Acquisition·Disposal of Assets	RA14	To acquire assets through management plan, discovery and selection of target assets, the conclusion of contracts, and other de-leveraging tasks.
		Purchase Quality Control	RA15	To establish a quality control system, understand inspection·contract·acceptance related rules, and take action and provide feedback for unsuitable products.
		Developing Purchase Strategy	RA16	To set the direction for purchase, and establish and execute the procurement(souring) decision-making and strategy to buy various products according to characteristics for efficient purchase and procurement.
		COGS Management	RA17	To establish a cost element-based costing standard for proper price determination and difference analysis, create a cost table, and analyze costs.
		Purchase Agreement	RA18	To be concluded through the agreement of various purchasing-related discussions and the establishment of negotiation strategies to eliminate possible risks with collaborators.
		Order Management	RA19	To collect and analyze pre-order information, purchase order, and progress management for the timely supply of necessary goods.
		Developing a PR Plan	RA20	To analyze the performance to improve the external recognition and image of the organization, and establish a public relations plan related to CS PR materials, and media utilization.
		PR·Event Management	RA21	To publicize the achievements of the organization through various public relations network and plan and manage external cooperation or internal events.
	Human Resources	HR Planning	RA22	To establish a upper management strategy and a HR management plan for the efficient management of HR by the organization's vision and strategy.
		Recruitment	RA23	To involve formulating, recruiting, selecting, and post-management of recruitment plans to secure excellent human resources.
		Performance Review	RA24	To conduct establishment of evaluation plans, goal setting, evaluation, training and HR evaluation to improve organizational performance and staffs' ability.
		Education & Training	RA25	To establish an annual training plan according to the direction of HR development which supports organizational workers' improvement through planning, operation, and evaluation of programs.
		Payroll Management	RA26	To fix and execute wages by reflecting the basic salary, paid leave and evaluation results, and recalculate tax according to the Income Tax Act to settle the annual tax.
		Welfare	RA27	To operate to improve working conditions and promote welfare for employees based on the organizational management strategy and budget plan.
		Labor Management	RA28	To prevent labor disputes in order to build cooperative labor-management relations between employers and workers, and conclude collective bargaining and collective agreements to manage performance.
		Retirement Management	RA29	To confirm those who are planning to retire, perform retirement procedures suitable for the retirement type, and operate a job transfer support system when necessary.

Section		Type of Competency	Competency Code	Definition
Professional Competency [Research Management]	Planning	Policy Direction Framework	RM1	To develop mid-to long-term and short-term strategies by analyzing the current status of national R&D policies.
		Project Planning	RM2	To plan a national R&D project based on internal and external environmental analysis, and establish an implementation plan.
		Project Feasibility Analysis	RM3	To examine to the validity of research project in science, technology, policy, and ecnomic field in advance in order to promote national R&D projects.
		Technology Trend Analysis	RM4	To investigate and analyze new developed technology research trends and technology trends in domestic & overseas, and reflect them in policy establishment and business planning.
		Developing a Resource Allocation Plan	RM5	To set the human, physical, financial, and temporal resource allocation standards necessary for the implement of national R&D projects, and establish a resource utilization plan.
		Writing a Request for Proposal	RM6	To prepare the RFP which strengthen the project goals and implementation contents in accordance with the national R&D implementation plan.
		Organizing & Managing Evaluator	RM7	To secure specialists for each field, forming an evaluation team, and utilize it when selecting projects.

Section		Type of Competency	Competency Code	Definition
Professional Competency [Research Management]	Project Management	Project Announcement & Assessment	RM8	To create a business announcement including RFP, and select a research project(execution organization) through professional and fair evaluation methods and procedures.
		Contract Management	RM9	To involve the signing, modifying, and cancelling the contract through legal procedures.
		Project Progress Control and Field Inspection	RM10	To confirm the work schedule and contents that are implemented according to the research plan, and carry out field inspections when necessary.
		Research Evaluation	RM11	To be an annual and staged evaluation of the ongoing research project and a final evaluation of the completed project.
		R&D Expense Settlement	RM12	To set and manage R&D expenses based on laws and regulations.
	Presenting Outcomes	Developing a Performance Implementation Plan	RM13	To establish measurement criteria and index for research project performance and formulate a performance utilization plan.
		Research Performance Implementation Analysis	RM14	To collect research outcomes(patents, papers, etc.), and conduct research, analysis, and evaluation work.
		Research Performance Management	RM15	To organize the outcomes, keep track and react into issues after completing the research project.
		Technology Transfer· Commercialization Support	RM16	To support research project results in order to utilize and spread in technology transfer and commercialization, etc.
		System Improvement and Legislation	RM17	To improve various regulations and systems related to R&D, and propose related legislative drafting.

Leadership competency(15)

Section	Type of Competency	Competency Code	Definition
Assigned Personnel (Executive)	Sharing Vision	L1	To share and present the vision making workers voluntarily participate in performance creation to achieve the organization's objectives.
	Innovation Management	L2	To actively respond to changes in the internal and external business environment, innovation management means discovering innovation projects, establishing and operating systems for implementation.
	Organization Management	L3	To achieve the organization's objectives, a systematic organization is established, operated, and managed in consideration of various human and material resources.
	Rational Decision-Making	L4	To derive solutions by not only identifying key issues and comparing but also analyzing stakeholders' opinions and alternatives.
Chief (Manager)	Goal Management	L5	To set and share specific goals for each project unit, and manage the process and result of goal achievement.
	Change Management	L6	To predict changes by monitoring the internal and external work environment, and present and implement countermeasures according to the change.
	Motivation	L7	To support workers to voluntarily perform their work, and compensate and encourage them in a variety of ways.
	Delegation of Authority	L8	To give autonomy to the person in charge and support workers to perform their work with authority and responsibility.
Hands-on Level	Self-Management	L9	To explore the types of competency development based on one's understanding of oneself and strive for growth to cultivate necessary competencies.
	Leading by Example	L10	To show the best model by caring for other workers and taking the lead in works that others do not prefer or challenge.
	Cooperation	L11	To establish an cooperative relationship that can collect necessary information and resources for promoting smooth business.
	Understanding the Organization	L12	To comprehend the organization's mission and management goals by figuring out the functions over departments, interests within the organization, and overall organizational operation process.
S&T Human Resources Candidate	Self-Directed Learning	L13	To set goals for necessary learning on one's own, establish plans, and implement them.
	Problem-Solving Skill	L14	To identify the consequences of various problems to derive optimal solutions.
	Career Development	L15	To explore jobs and occupations suitable for aptitude and ability, and establish career development paths by considering related jobs.

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Planning/Review HR Network Division

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