



ACECR

Khorasan Razavi

Vice chancellery For Research & Technology
khorasan razavi

RESEARCH AND TECHNOLOGY DEPUTY OF ACADEMIC CENTER FOR EDUCATION, CULTURE AND RESEARCH (ACECR), KHORASAN-E RAZAVI BRANCH

One of the most important missions of ACECR-Khorasan-e Razavi branch is to extend the developmental and applied researches as well as to provide specialized services required by the community. Research & technology Deputy of academic center for education, culture and research (ACECR), Khorasan-e Razavi branch began its activities in the late 1360s (1980s) in order to provide specialized services and to conduct the applied research projects as well as to utilize the scientific findings in order to generate wealth from the acquired technologies. The main aims of this deputy are as follows: satisfying the needs of society, producing indigenous technical knowledge, extending the boundaries of knowledge, spreading a culture of research, and providing the scientific achievements in efficient formats. this deputy has executed major steps to produce science and provide the services needed by various organizations and industries in the province by relying on experts and committed workforce and taking advantage of the province's facilities and collaborative industrial units, which has successfully implemented more than 500 applied research projects with applicants (employers) in the last decade.

Some of the tasks of this deputy are as follows: establishing effective communications with public and private institutions, organizations and agencies to meet their research and study needs, solving some of the problems in the community and producing technical knowledge.

The specialized services and research projects implemented in the research groups of ACECR-Khorasan-e Razavi branch are defined, designed and then implemented according to employer's needs, based on which the various stages are controlled and supervised by the employer. The contracting employers of this unit consist of organizations, government, military and public bodies and also private companies. These contractors define the research projects based on their organizational objectives to acquire technical knowledge of new products, process improvement, and automation of production lines, specialized training of personnel and so on ; then, they assign these projects to the appropriate research centers and control them in order to implement fundamentally and properly .

In terms of organizational structure, research & technology deputy of this unit operates in four fields of medical sciences, agricultural sciences, humanities and engineering and technical sciences with the help of its research institutes, research groups and specialized service centers and currently, which consists of 3 research institutes, 15 approved research groups, and 6 specialized service centers.

ACECR Food Science and Technology Research Institute were established in 2007 (1386). The institute comprises three research groups on food processing, food additives and food quality and safety. ACECR Tourism Research Institute, which includes research groups on tourism sociology, tourism planning and tourism economics, was established in 2011 (1390) with the priority of religious tourism. ACECR Industrial Biotechnology Research Institute was established in 2013 (1392), which includes research groups on industrial mushrooms biotechnology, ornamental plants biotechnology, and industrial microorganism biotechnology. In this deputy, the research groups on new substances, blood-borne infections, restorative medicine, and stem cells and molecular medicine are other active groups. Specialized Service Center for Medical Diagnosis and Pathology is one of the first established centers in ACECR-Khorasan-e Razavi and four medical diagnosis laboratories including central laboratory, laboratory no.2, Neishabour laboratory and Gonabad laboratory are working under the supervision of this center. Center of Specialized Dental Cares, Specialized Center for Engineering and Technical Services, Specialized Service Center for Edible Mushroom Spawn Production, Specialized Service Center for Consultation and Psychology and Specialized Service Center for Tourism are the other centers of Research and Technology Deputy of ACECR- Khorasan-e Razavi Branch. Currently, 100 full-time and part-time employees are working in the research groups of this deputy. Among them, 55 people work as fulltime faculty members and 40 work part time. Besides, many prominent specialists and professors cooperate with this office as the part time members of the scientific councils. Up to now, 450 research projects have been executed in this deputy, while research groups of ACECR have won two Khwarazmi Prize and registered 13 patents in the country. Other activities of these groups include the publication of 25 books and the publication and presentation of research papers inside and outside the country. In addition, the research groups have organized about 50 conferences and workshops.

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ACECR TOURISM RESEARCH INSTITUTE

The holy shrine of Imam Reza in Mashhad and various natural and historical attractions of Khorasan province have made tourism one of the province's most important developmental capacities.

Regarding the multifaceted nature of tourism and the need for a multidisciplinary (physical, social, cultural and economic dimensions) and also the lack of a centralized research institution in the field of tourism studies, ACECR Tourism Research Institute has started its professional since October 2010 (Mehr 1389) after obtaining the

approval of its head office in order to focus on specialized researches and scientific products of tourism, in accordance with the basic needs and national documents of the country.

one of the important aims of this institute is to meet the research needs of executive agencies that are policy makers in the field of tourism. Moreover, considering the relative advantages and future needs of the province and country, qualitative research development of, innovations to identify the issues are the main missions of this institute that require some researches in this field.

this institute currently contains the following three research groups:

- ✓ Tourism Sociology Research Group (starting from 1995 (1374))
- ✓ Tourism Management and Planning Research Group (starting from 2002 (1381))
- ✓ Tourism Economics Research Group (starting from 2004 (1383))

Vision

1. pioneer to identify the problems, requirements, and challenges of tourism industry
2. Science research hub of religious tourism in the country
3. implement effective fundamental, applied and developmental researches
4. Effective scientific communication with universities, research centers and specialized scientific associations at national and international level.

Research orientation:

- Considering the needs of the province and the city of Mashhad in identifying research issues and adopted research strategies in tourism field
- Developing a systematic and interdisciplinary research program network for sustainable religious tourism

Tourism Research Institute capabilities :

Some of the distinctive activities conducted by this institute are as follows:

- * conducting near 100 research project in the field of tourism
- * Publishing the Scientific Research Journal of Tourism Studies
- * Publishing near 74 articles in scientific research journals
- * Presenting about 105 papers in scientific research conferences and seminars
- * Authoring or translating 47 books
- * Holding 58 specialized workshops and meetings
- * conducting the national tourism survey about values, attitudes and behaviors of tourists
- * Holding the International Conference on Tourism Strategies of the Islamic Republic of Iran; Challenges and Prospects

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Biannual Journal of *Social Studies in Tourism*

JOURNAL OF SOCIAL STUDIES IN TOURISM

In order to enhance the social knowledge of tourism, ACECR Tourism Research Institute publishes the quarterly journal of social studies in tourism

Up to now, 14 issues of this journal have been published from 2012.

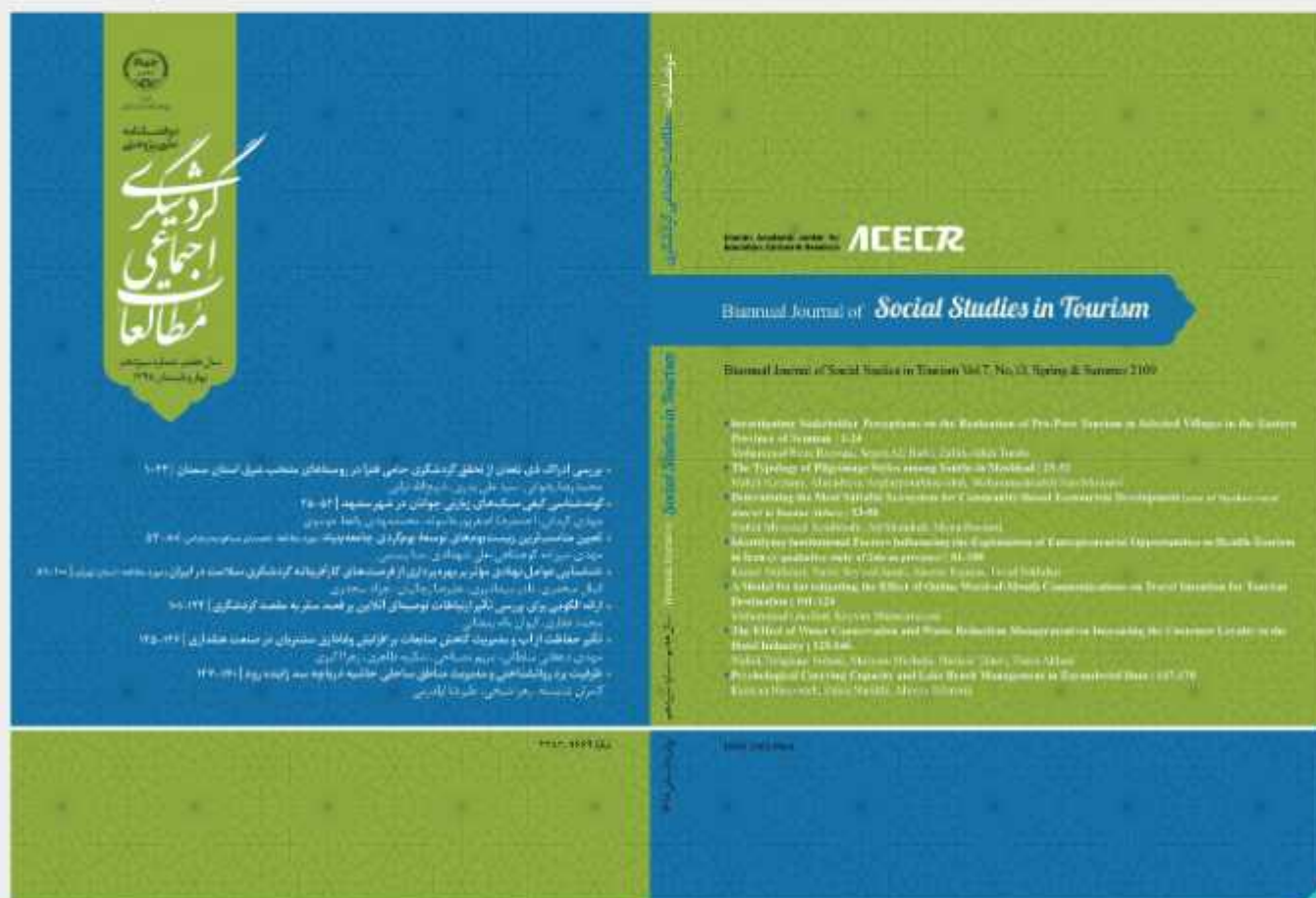
You can submit an article through the journal site

The approach of Journal of Social Studies in Tourism

The majority of researches have focused on the economics and management of tourism and from a social perspective, tourism studies have not grown in comparison to other areas. By publishing the Quarterly Journal of Social Studies in Tourism, ACECR Tourism Research Institute intends to provide a platform for scholars to share their views and opinions on the socio-cultural contexts, processes and consequences of tourism and contribute to the production and dissemination of social knowledge of the rapidly growing phenomenon of tourism.

Thus, this publication publishes those articles that consider the growing phenomenon of tourism and the factors influencing its social and cultural implications. To achieve these mentioned aims, the article must meet at least one of the following conditions:

- * Presentation of the findings and the obtained results of the original researches of the authors
- * Production of original theoretical concepts systematically and contribution to the field's body of knowledge
- * Methodological innovation



TOURISM SOCIOLOGY RESEARCH GROUP

Tourism Sociology Research Group, known as one of the main groups of Khorasan-e Razavi Tourism Research Institute, contains more than two decades of experience in tourism related studies and research.

This group mainly focuses on research and applied studies about social and cultural aspects of tourism, such as tourists' satisfaction, sense of security at the destination, attitude towards the host community, etc.

In addition to conducting numerous research projects and articles in the field of religious tourism and cultural and social issues of pilgrimage to Imam Reza holy shrine, this group is also conducting "The National Survey of Tourism Values, Attitudes and Behaviors". The project's sample size includes 5000 Iranians and 1000 foreign tourists who have traveled to Iran.



Some Implemented Research projects:

- * The National Survey of Tourism Values, Attitudes and Behaviors
- * Evaluating the relationship between hoteliers and taxi drivers and pilgrims of Imam Reza shrine and investigating how to improve this mentioned relationship
- * Investigating the cultural needs of pilgrims in the pilgrimage process and its pathology
- * Assessing the quality of accommodation services and preferences of Iranian pilgrims while traveling to Mashhad
- * Surveying the attitude and perceptions of pilgrims towards people of Mashhad and the factors influencing them
- * Systematic reviewing of issues, explanations and achievements of tourism sociology (with emphasis on religious tourism) as a conceptual model
- * Designing and providing the Model of Mashhad Holy City (future approach) and Pilgrimage Development Model in Mashhad City
- * Developing a strategic document and a -year plan for pilgrims and pilgrimage from a socio-security perspective
- * Investigating the relational challenges in cultural exchanges of tourists with citizens of Mashhad
- * Investigating the social factors affecting the dysfunctional relationship between tourists and hosts in Mashhad
- * Evaluating available informing methods in order to achieve some appropriate ways for informing the pilgrims in the holy shrine
- * Pathology of the methods of giving information about the cultural programs of the Deputy of Advertising

Publication of books and research papers : Tourism Sociology Research Group has published approximately 46 scientific-research articles in prestigious domestic and foreign journals while has presented articles and posters in several domestic and foreign seminars and conferences. The group has also authored or translated three books in the field of tourism, which are as follows:

- * Global tourism, sustainable tourism and nature tourism
- * Social Sciences and Tourism
- * International vision of religious tourism and pilgrimage management
- * Religious Tourism and Pilgrimage Management: An International Perspective



TOURISM MANAGEMENT-AND-PLANNING RESEARCH GROUP

Regarding to the rapid growth of the number of tourists around the world, urbanization, the development of technology and the increase of information volume have made utilizing the latest technologies a necessity to organize tourism spaces. Therefore, "Tourism Management and Planning Department" is researching about policy making, planning and management of tourism which are some top priorities of executive organizations. This group began its scientific activity in 2002 as one of the critical facets of ACECR Tourism Research Institute.

Research projects :

Some of various projects that has completed by Tourism Management and Planning Research Group is:

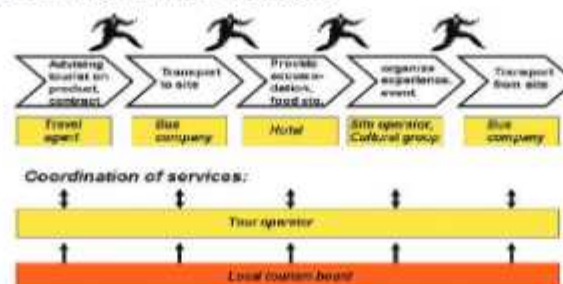
1. Implementing some studies on spatial planning in Khorasan-e Razavi province (analysis of ecological, environmental, and tourism capabilities in the province)
2. Paying attention to the role of Islamic architecture in attracting tourists in Mashhad
3. Investigating the status of health tourism in Mashhad with emphasis on foreign tourists
4. Comparative study on health tourism marketing mechanisms in many country
5. Determine the Recreational Carrying Capacity in Ferdowsi Tomb
6. Analyzing the quantity and quality effects of pilgrimage development many country
7. Identifying and introducing of indicators valuable locations of Mashhad
8. Assessing the capacity and feasibility of creating and developing medical tourism in "ACECR"
9. Developing a long-term plan Shandiz tourist city by future study approach
10. Developing the Health Tourism Marketing Management Program of Khorasan-e Razavi province
11. Developing standards for the establishment and construction of ecotourism resorts

Books

- Sustainable tourism; from mass tourism to ecotourism
- Strategic management of hospitality and tourism

Capabilities

- * Implementing fundamental and applied studies in kinds of tourism, historical and valuable places contexts
- * Preparing and compiling development plans in tourism management and planning
- * Generating spatial databases of tourism spaces and spatial analysis base on GIS
- * Evaluating and spatial planning of tourism
- * Conducting studies on management and planning of historical and valuable tourism contexts
- * Performing applied and developmental research in tourism of Natural based, Cultural, Religious, Health and Medical, Ecotourism, Geo-tourism and e-tourism.



TOURISM ECONOMICS RESEARCH GROUP

Tourism Economics Research Group (TERG) has begun working since 2004 with the aim of conducting fundamental, developmental and applied studies and research projects in various economic fields, especially with an emphasis on the tourism economics. The main activities of TERG include research, planning, documentation and acquiring tourism information and data, consultation and knowledge transfer.

Among the main fields of tourism studies, this group covers the following subfields: employment, marketing, investment and finance, revenue, financial feasibility, business environment and economic advice to the owners of tourism related businesses. Some of the most important projects and books carried out by TERG are:

Research projects conducted:

- * Assessing the capacity and feasibility of medical tourism development in ACECR
- * Survey how to increase the share of handicrafts as travel and pilgrimage souvenirs
- * Providing investment facilitation strategies to develop tourism in Shiraz
- * Studying the goods and services market for tourists and pilgrims in Mashhad
- * The application of Waqf financial institutions in the tourism industry of Mashhad
- * Investigating the private investment in Mashhad's recreational attractions (pools and water parks)

Books:

- * Forecasting methods in tourism
- * Tourism and agriculture
- * Design science in tourism
- * Economic studies for strategic document and 5-Year plan of Imam Reza's pilgrimage
- * Preparing a religious tourism cluster map for Mashhad city

Capabilities :

- * Conducting fundamental, developmental and applied researches in tourism economics
- * Feasibility and economic evaluation of investment in tourism sites
- * Identifying and preparing investment albums
- * Providing tourism statistics and information and satellite accounts
- * Studies on tourism economics in different fields of tourism, including religious tourism, health tourism, ecotourism, historical and cultural tourism, urban tourism, industrial-commercial tourism and rural tourism

RESEARCH DEPARTMENT OF URBAN AND REGIONAL SUSTAINABLE DEVELOPMENT

Urban and Regional Sustainable Development

Research department is the first interdisciplinary group among ACECR humanities and social sciences groups which aims to conduct developmental and applied plans and studies in the field of urban and regional sustainable development. This department started working in 1990s (1370s) by conducting social studies and has carried out many projects in the urban and regional areas of the province and country so far. The focus of this group is on the major issues of sustainable development and environment at the urban and regional scale in Khorasan-e Razavi province and eastern Iran.

Different specialties of group members (in the fields of geographic information system, architecture & urbanism, ecological city, regional development & planning, poverty, financial markets, women's social studies, social issues assessment, agricultural development, labor market, and so on) along with their long-term research background has made it possible to execute the large and interdisciplinary projects.



Capabilities and activities performed:

- ✓ Conducting macro physical and socio-economic studies on urban and regional development
- ✓ Formulating strategic documents and studies and urban development strategy
- ✓ Studies and projects of green city and green building
- ✓ Scenario writing and looking ahead
- ✓ Spatial justice and location studies
- ✓ Regional inequalities and economic planning
- ✓ Environmental economics and energy economics
- ✓ Designing and presenting a model for ecological and green city
- ✓ Geographical information system and remote sensing
- ✓ Surveying welfare and social security
- ✓ Studies on urban transportation
- ✓ Studying social capital and cultural developments and social harms and deviations
- ✓ Economic evaluation of small projects and considering the possibility of construction of medium and large urban projects
- ✓ Surveying welfare and social security
- ✓ Studies on urban transportation

Books :

- ✓ Studies on planning of territorial management of Khorasan-e Razavi province-2019
- ✓ Transit-Oriented development (Making It Happen)-2017
- ✓ Industry, mine and trade strategic development plan of Khorasan-e Razavi province-2016
- ✓ Studies on spatial planning program in Khorasan-e Razavi province-2011
- ✓ Eco- city planning-2013
- ✓ Network and spatial analysis in the network in ArcGIS-2010
- ✓ Software application guide with emphasizing on SPSS research and statistics method-2010
- ✓ Identifying the valuable city locations-2009
- ✓ Conducting a research on the realization of detailed urban plans-2008
- ✓ Validity and reliability assessment (By Carmines & Zeller)-2007



THE GLOBAL GOALS
For Sustainable Development



SPECIALIZED SERVICE CENTER OF TOURISM

Specialized Service Center of Tourism has established in January 2014 (Dey 1393). The center seeks to improve the quality of services and its own status and develop the country's tourism industry by establishing a link between the tourism academic sector and the tourism market.

The presence of different research groups for tourism economics is one of the strengths of the Khorasan-e Razavi ACECR Tourism Research Institute, as a result, the optimal utilization of this scientific potential generates the right

context to provide some specialized services by the Specialized Service Center for Tourism. Due to the growth and development of this center, the scope of its activities and services will initially conducted in Mashhad and Khorasan-e Razavi province, and eventually will be widely implemented throughout the country. In this regard, identifying the necessary needs of tourists visiting tourism centers in Mashhad and Khorasan-e Razavi province is one of this center primaries aims. To achieve this aim, introducing the tourist attractions through maps, booklets and brochures to tourists, in addition to providing professional consulting for tourism participants (travel service agencies, hotels, organizations, etc.) can be considered as an important and critical factor to promote the country's tourism industry.



Educational and research services:

The most important aspects of this service center are as follows:

- * Designing and implementing specialized tourism software systems
- * Planning and conducting educational and specialized tours (urban and suburban)
- * Holding specialized courses and workshops for tourism, hospitality and catering services
- * Preparing physical and smart tourism maps
- * Designing and implementing cultural souvenir packages
- * Producing equipment for tourism and hospitality units

Capabilities and activities performed:

After establishing infrastructures and providing strategic plans in the early years, other significant achievements of this center include:

- * Collaborating with Gorgan Great Wall archeology project as consulting projects (University of Edinburgh, Scotland), 2016 (1395)
- * Holding a conference on health tourism, cultural tourism and tourism in New Zealand (University of Otago); a group of professors, 2016 (1395)
- * Conducting a science tour in France; University of Montpellier, 2016 (1395)
- * Holding a workshop on standardization of tourism attractions (University of Montpellier France); Cruze, 2016 (1395)
- * Holding a workshop on standardization of tourism products (Tehran); Cruze, 2015 (1394)

ACECR Specialized Services Center for Tourism has also begun activities in the field by generating knowledge-based subsidiaries. The following is a list of implemented and ongoing important activities and projects of this center:

- * Producing a tourism smart map and augmented reality app for Mashhad city
- * "Rahyad Company" Designing and producing cultural-tourism souvenirs
- * Rahyad Jadeh Abrisham travel agency
- * "Lotus" access control system
- * Specialized training center for tourism and hospitality
- * "Curebooking.com" Electronic infrastructure for health tourism
- * Import and export software system
- * Employment software system for graduates

SPECIALIZED SERVICE CENTER FOR CONSULTATION AND PSYCHOLOGY



With over four decades of experience in the fields of research, education, medicine and culture in different ways, ACECR is known nationally and internationally for its scientific and executive staff and its emphasizing on the quality and professionalism of services. Considering the capacity of this institution in the field of psychology and counseling and the serious shortage in this field due to the growing need of society for a comprehensive and specialized center, this center has started working with the aim of improving the mental health of the community by obtaining the official approval of Iranian Organization of Psychology and Counseling. The center offers its services in the following three fields:

Treatment field:

Treatment field:

It operates in the following six specialized groups:

1. Child and Adolescent Specialty Group: including child and adolescent psychiatry services, psychotherapy, play therapy, counseling and parenting.
2. Marriage and Family Specialty Group: including premarital counseling, communication issues, marital problems, couple therapy and family therapy.
3. Clinical Disorders Specialty Group: including psychiatric services, psychotherapy and counseling for all mood, anxiety, personality and psychosomatic issues and so on.
4. Education and Employment Specialty Group: including educational counseling, treatment of learning disabilities, major selection, job selection, entrepreneurship and management (staff selection or promotion).
5. Psychometrics Specialty Group: including performing and interpreting intelligence, personality, clinical and premarital tests, talent finding and interest assessment, job tests to recruit appropriate forces based on the individuals' abilities and talents.
6. Technology Therapy Specialty Group: including brain mapping, improvement of mental functions (increased attention and memory focus, etc.), treatment of hyperactivity and attention deficit, treatment of psychosomatic disorders such as migraine and tension headaches.

Education field:

It includes holding conferences, workshops and therapeutic groups with the following general topics:

A. Workshops:

1. Life skills: self-awareness skills, anger control, stress management, effective communication, problem solving skills, time management, creative thinking, and critical thinking and so on. The course can include all or some of these skills based on the needs of audience.
2. Premarital skills: successful marriage, my right spouse, dating questions and so on
3. Married life skills: including an efficient family, enriching couple relationships, improving life quality, couples' private relationships (for men and women separately)
4. Parenting skills: effective parenting - responsible children, understanding and reaching the child's world, communicating with adolescents, coping with challenges and so on

B. Treatment groups:

Overcoming unhealthy dependence, inner happiness, understanding and improving the child within, overcoming perfectionism, relaxation and so on

C. Training classes:

Strategic management for managers and motivation for employees, creativity, entrepreneurship and so on

D. Educational Skills:

Planning classes, proposal writing, study methods and so on

Research field:

Implementing fundamental and applied researches in the field of psychological issues, including family issues, youth problems, mental health survey, identifying strengths and weaknesses in the organization, assessing individual and occupational performance, effectiveness of actions taken and ...

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FOOD SCIENCE AND TECHNOLOGY RESEARCH INSTITUTE

In the field of food industry, Academic Center for Education, Culture and Research (ACECR), Khorasan-e Razavi Branch started its activities in 1990 (1369) and obtained the final approval for the Food Industry Research Group in 1994 (1373). In 2002 (1381), by Investigating the comparative advantages of Khorasan-e Razavi province and considering the macro policies of ACECR and also the capabilities of the group, the establishment of a research institute in this field was considered.

By establishing two research groups of the quality and safety of food and food additives and completing the academic staff, the official approval was achieved for Food Science and Technology Research Institute in 2007. Also, this institute received the approval of the Ministry of Science, Research and Technology in 2017 (1396). In addition to research groups, two physicochemical and microbiological food research laboratories, as well as two research pilots and semi-industrial production including food additives and food extrusion are currently active in this research institute. Furthermore, in the field of all-natural food colorings Golchin Toos Natural Additives Knowledge-Based Company (Afzoone) was established in 2015 (1394), licensed by Science and Technology Vice-Presidency, to commercialize research achievements.

Vision :

- ✔ A pioneering and reference research institute in the development of science, technology and commercialization of healthy and functional food products

Mission :

- ✔ Conducting coherent and demand-driven research in the field of food science and technology with an approach to upgrade technology and improve food health and environmental sustainability



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FOOD PROCESSING RESEARCH DEPARTMENT

Food processing is a productive and strategic industry that plays an important role in food safety and creating added value to agricultural products. In this regard, promoting food quality, reducing waste and production costs as well as diversifying food and reducing environmental pollution by optimizing and designing effective food processing methods are at the forefront of this department's activities. The department's main activities are as follows:



- ✓ Food processing optimizing to reduce wastes and increase productivity.
- ✓ Designing food processing methods using new technologies.
- ✓ Utilizing micro- and nano-technology in food production and packaging
- ✓ Development of new food products and technical solutions for food industry problems.

Research orientation: Due to increased consumption of dietary products and the ability of extrusion technology to produce such products, the food processing department has incorporated the use of extrusion process in its medium-term research programs either to design new products or improve the quality of some common products. The advantages of extrusion technology include: versatility, variety of products and its desirable quality, less production costs than other cooking methods, high efficiency and minimum wastewater.

Capabilities and activities performed:

- ✓ Modifying and improving food properties through the extrusion process.
- ✓ Producing extruded snacks based on cereals, grains, dietary fibers, oilseeds and nuts.
- ✓ Formulation of flavored coatings (dragee).
- ✓ Producing dietary fiber supplements and modifying their properties by extrusion method.
- ✓ Offering active food packaging and formulation of edible coatings.
- ✓ Holding training courses and specialized workshops on extrusion technology and other innovative technologies in the food industry.
- ✓ Producing hydrolyzed casein by enzymatic method to utilize in the formulation of infant foods.
- ✓ Research on applications of ultrasound in food industry
- ✓ Formulation of Barbari and Sangak breads fortified with extruded wheat bran.
- ✓ Producing protein isolates to use in food formulations and edible coatings.
- ✓ Enhancing the performance and stability of probiotic bacteria and prebiotic compounds in extruded products.
- ✓ Producing and optimizing soy-based foods (milk, yogurt, cheese, drinks, ice cream, mayonnaise, protein isolate).
- ✓ Evaluating the probiotic and prebiotic properties of native and commercial sources for the formulation and production of dragees (flavored coatings) in the model system.
- ✓ Optimization of inulin extraction from native plants by ultrasound waves and comparison with conventional methods.
- ✓ Production of edible mushroom powder.
- ✓ Fortification of table salt.
- ✓ Optimization of snack formulations based on potato and cereal.
- ✓ Optimization of potato chips production process to reduce acrylamide.
- ✓ Producing synbiotic yogurt ice cream by microencapsulation technique.

FOOD ADDITIVES RESEARCH DEPARTMENT

Food additives are useful and practical compounds that are used to improve some features of food, such as quality and nutritional value, as well as overcoming the technological problems associated with food production. Food additives include natural and artificial food colorants, flavors, antioxidants, antimicrobial compounds, etc. Taking the importance of food additives into account, and considering the high demand of additives by food industry, food additives research department started its research activities in 2004 (1383), aiming to optimize the production of food additives in pilot plant scale, and to improve their performance. The main scopes of the research department are as follows:

- Extraction and identification of bioactive components from natural resources and their application as food additives;
- Stabilizing food additives and improving their performance;
- Optimization of food products formulations using additives;
- Synthesizing food additives commonly used in the food industry.

Research orientation:

- ✔ Today, the drawbacks of the artificial additives are well known, as the role them in occurrences of cancers and diseases have been proven. Therefore, finding the natural additives and replacing them with the artificial compounds is considered as a top research priority in the food industry. Our country has one of the richest plant resources in the world in both terms of quantity and variety, providing a great potential for producing the natural food additives. Food colorants are one of the most important natural additives. Considering the wide application of colorants in several fields including food, pharmaceutical, and cosmetic, the production of food colorants from natural origins has been considered as the top of the medium-term research activities of the department.

Capabilities and activities:

- ✔ Successful experience in extracting and producing the natural food colorants (curcumin, annatto, betalain and anthocyanins) and their application in various food products;
- ✔ Micro/Nano-encapsulating the natural additives using various techniques;
- ✔ Production of curcumin-loaded lipid nanocarriers and evaluating their physicochemical properties;
- ✔ Encapsulation of crocin of saffron and utilizing it in saffron candy production;
- ✔ Stabilizing the natural red color (betalain) to be used in bakeries;
- ✔ Increasing the shelf life of food products using authorized food additives;
- ✔ Producing functional and dietary foods using various food additives;
- ✔ Optimizing food formulations;
- ✔ Producing the suspending agent for pulp-based drinks and syrups
- ✔ Optimizing the formulation of aloe vera products (beverage, compote, syrup and jam) through incorporating the food additives and modifying the process
- ✔ Making and producing the jujube-based cake in large-scale;
- ✔ Extending the shelf life of nuts using bioactive edible coats;
- ✔ Producing industrial sourdough using biotechnology;
- ✔ Production of frying oil with high thermal stability;
- ✔ Producing healthy dietary bread using flour from other crops;
- ✔ Producing low-fat meat products (dietary) using fat substitutes;
- ✔ Providing consultation and specialized services to the industry in the field of natural food additives;
- ✔ Holding training courses and specialized workshops on extraction, identification and application of natural food additives;

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FOOD SCIENCE AND TECHNOLOGY RESEARCH INSTITUTE

DEPARTMENT OF FOOD QUALITY & SAFETY

History

The Research Department of Food Quality and Safety (FQS) was established in 2003. The main objective of the FQS research group is to improve public health and food safety, by enhancing the research on the human nutrition area. Nowadays, the high level of health among people in a community is one of the most important indicators of community development. Due to lack of a balance diet among people, dietary food products have a special role in the food industry. Dietary food products can be effective in various ways to prevent and control chronic non-communicable diseases (cardiovascular disease, high blood pressure, diabetes, cancer, obesity, etc.). Therefore, conducting a research on dietary food products has been considered as a top priority in this research group recently. FQS team is studying the dietary food products which included using bioactive compounds, fat replacements and sugar substitutes, in food formulation. Due to the potentials of FQS team and the essential role of dietary products, as well as the importance of cereals in the daily food basket, this group has focused its activities on "dietary products of baking industry".

Research Area :

- ✓ Optimization of formulation, production and quality control of dietary food products and evaluation the clinical effects on consumers
- ✓ Improvement, optimization and design for food quality and safety monitoring methods from production to consumption
- ✓ Identification, control and determine the maximum residue level (MRL) of veterinary drugs, pesticides and heavy metals residues and mycotoxins in the food throughout the production chain to the consumption
- ✓ Standardization and Development of quality management systems, hygiene and food safety assurance

Research orientation:

Focusing on the primary role of food as a source of Energy and Nutrients has now shifted to the biological role of its components in human health.

Changes in consumer demand and their life style have led the food industry to emphasize on super healthy food products.

Low-calorie foods with lower levels of fat with emphasis on lower saturated fatty acids and sugar and higher amount of fiber can be distinguished as a group of healthy foods. Consumers are more likely to eat low-calorie and sugar-free products. This trend leads to increase in life expectancy.

Capabilities and activities performed:

- ✓ Optimizing the formulation and production process of dietary and healthy food products
- ✓ Standardization (standard formulation) of new dietary products, especially cereal and confectionery products
- ✓ Producing new packages to increase health, quality and shelf life of foods
- ✓ Optimizing low-calorie permix formulations to reduce sugar



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FOOD INDUSTRY RESEARCH LABORATORIES

Regarding the importance of food and the increasing number of food factories and the limited laboratory facilities in the regulatory agencies, modern laboratories equipped with the tools and equipment needed to be implemented some specialized tests for research and commerce purposes (export and import) in accordance with national and international standards with credible results in domestic and international authorities are necessary.

Therefore, the Food Industry Research Laboratory started working in 2002 (1381) in the field of quality control and examination of the physicochemical and microbial properties of food products. This laboratory is capable of controlling the raw materials used in food and processed food industries at all stages of production, supply and distribution through conducting sensory, physical, chemical and microbial tests based on existing standards.

Capabilities :

- ✓ Conducting specialized tests required for research projects
- ✓ Implementing specialized texts required for postgraduate theses
- ✓ Providing laboratory services to food production and marketing units
- ✓ Holding special trained courses for college graduates and manufacturing units
- ✓ Attracting student research projects and theses
- ✓ Conducting research and consulting activities for production units
- ✓ Participating in the development of Iran's national food standards

Facilities and equipment :

Considering the increasing development of laboratory devices and the importance of speed and accuracy in analysis, Khorasan-e Razavi ACECR Laboratory not only is engaged in research projects of ACECR Food Science and Technology Research Institute, but also in other government and non-governmental sectors because it has appropriate space, skilled and technical staff and specialized equipment such as Physicochemical and microbiology laboratory (sterilization room, preparation room and culture room). This laboratory is also able to perform many specialized tests to control food quality.

Equipment and specialized tests	
Food texture analysis (textur analyzer)	Food color analysis (Hunter Lab)
Water activity measurement	Electrophoresis: Protein and peptide isolation
Ultrasound treatment (bath & probe) for Mixing, extraction, surface cleaning,	Homogenizer: Homogenization of aqueous phases, homogenization of materials
Protein / nitrogen measurement (Kjeldahl)	Fat percentage measurement (Saxhlet)
Isolation of solid particles from liquid (regular and refrigerated centrifuges)	UV-VIS spectrophotometer: Spectroscopy, determination of spectral absorption in materials
ELISA device: Identification of viruses and bacteria	Ash measurement (electric furnace)
Sterilizing metals, glass and drying samples (oven and dryer)	Isolation of fat from milk and dairy products (Gerber centrifuge)
Hammer and abrasion: Mixing and softening food with the desired mesh	Determination of refractive index (refractometer)
Water distillation machine: Preparing double distilled water for solution	Milkscan: Analysis of factors related to milk and non-dairy milk products
Oven, dough, packaging: Bread and cake production	Ice cream maker: Freezing of ice cream mixture and making it uniform
Cold incubator: Growth of microorganisms at different temperatures	Autoclave: Sterilizing the culture media and cultivation equipment
Circulator: Setting and keeping the temperature uniform throughout the process	Rotary viscometer: Determination of viscosity of putres and concentrates
Clevenger: Extraction of plant active ingredients	Camera equipped microscope: Identification and photography of microorganisms
General equipment includes: PH meter, scales, shaker, vacuum pump, hot plate, bain-marie, chemical and microbial hood	
Investigation and microbial cultivation of various foods including:	
Overall enumeration of microorganisms, mold, yeast, sulfate reducing clostridia, Escherichia coli, coagulase-positive staphylococci, Bacillus cereus, Clostridium perfringens, Pseudomonas, Enterococcus, lactic acid bacteria, Enterobacteriaceae, mold counts (Hazard), salmonella	

RESEARCH PILOTS

Food additives Research Department has thoroughly investigated the production of food additives from natural resources. Hence, the first "Research and pilot plant center of food additives" in Iran was established in ۲۰۱۲ to complete the commercialization cycle of the knowledge-based products.

Capabilities :

- Production of natural colorants with applications in food, pharmaceutical and other industries;
- Production and synthesis of other food additives (caramels, flavors, gums, etc.);
- The ability of extracting a wide variety of essences and extracts from natural resources;
- Extraction of bioactive components at low temperature, producing high quality products;

Facilities :

- ✓ (Hammer Mill)
- ✓ (Multimill)
- ✓ (Extractor)
- ✓ (Evaporator)
- ✓ (Centrifuge)
- ✓ (TrayDryer)
- ✓ (Spray Dryer)
- ✓ (Vibro Sifter)

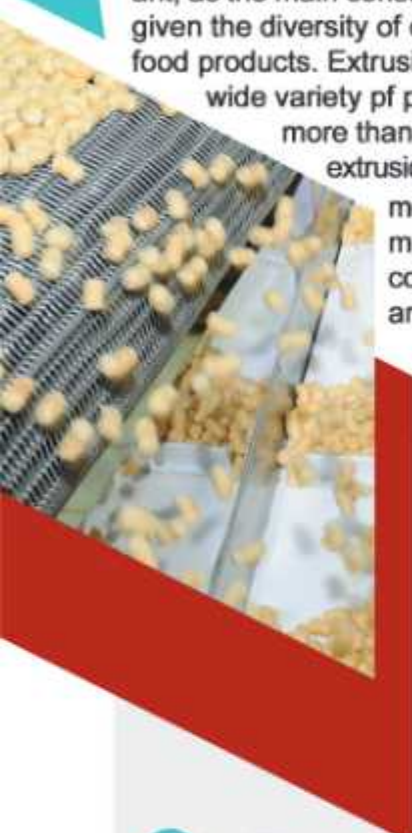


RESEARCH AND PRODUCTION PILOT-PLANT FOR FOOD EXTUSION

Regarding the high consumption of extruded (puffed) snacks and nutritional concerns regarding this issue, production of healthy snacks has been a challenging topic in recent years. This becomes even more important, as the main consumers of these products are generally young children and students. On the one hand, given the diversity of consumers, there is a great deal of competition for manufacturers of new and unique food products. Extrusion is a flexible technology that, enables the production of a

wide variety pf products. Accordingly, ACECR Food Science and Technology Research Institute, with more than two decades of research experiences, launched the first semi-industrial

extrusion research and production pilot-plant in Iran. Transferring of applied research achieve ments to industry, commercial scale production and promotion of community are the main purposes of this unit. The extruder has a capacity of 10 to 100 kg/h and three controllable heat zones with the ability to adjust input feed rate, screw speed, size and shape of output product.



Capabilities:

- ✓ Ability to produce a wide range of products by changing the operating conditions of the extruder and dyes
- ✓ High variety of raw materials and manufactured products
- ✓ Less costs than other cooking methods
- ✓ High efficiency through continuous device operation
- ✓ Preserving a large proportion of heat-sensitive compounds, eliminating anti-nutritional compounds and high-quality products
- ✓ Reducing environmental pollution because of no need for wastewater treatment facilities
- ✓ Conserving critical resources due to low water consumption in the cycle of extruded product production



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KNOWLEDGE- BASED COMPANY OF GOLCHIN TOOS NATURAL ADDITIVE



Golchin Toos Natural Additive was established in 2015 as a commercial spin-off of Food Sciences and Technologies Institute, ACECR. The main objectives of this company are developing new products based on edible natural colorants, delivering professional and consulting services, developing production processes, etc.

VISION :

- ✓ Production of bioactive components through novel technologies, promoting the quality and safety of food products.

PRODUCTS :

- ✓ Curcumin
- ✓ Annatto
- ✓ Beet Red
- ✓ Crocin
- ✓ Anthocyanin
- ✓ Chlorophyll
- ✓ Lycopene
- ✓ Paprika



APPLICATION OF COMPANY'S PRODUCTS

The company's products can be used in a wide number of different food industries, including:

- ✓ Snacks
- ✓ Pasta
- ✓ Dairy products
- ✓ Confectionaries
- ✓ Pharmaceutical products
- ✓ Functional beverages
- ✓ Bakery

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RESEARCH INSTITUTE FOR INDUSTRIAL BIOTECHNOLOGY (RIIB)

Nowadays, biotechnology plays an undeniable role in solving agricultural problems, contributing to food safety and promoting community's food health. In this regard, Khorasan-e- Razavi ACECR established Research Institute for Industrial Biotechnology (RIIB) in September 2013 with the mission of conducting coherent and purposeful research for technology development and commercialization of knowledge-based products tailored to the current needs of the society. Thus, the main aims of this institute include producing knowledge-based bio-compounds, providing single cell protein, creating and the utilizing the country's local germplasm, creating added value in agricultural wastes with the help of biotechnology, doing research in the field of genetic breeding and improving quantitative and qualitative traits in mushrooms, algae, bacteria and ornamental plants, and offering specialized services (including fresh products and consulting services). This research institute consists of the following three research departments : Industrial Fungi Biotechnology, Industrial Microbial Biotechnology, and Ornamental Plants Biotechnology. One of the distinctive features of RIIB is doing applied research leading to commercialization of knowledge-based products.

Distinctive products of RIIB:

- ✓ Commercial production of important medicinal mushrooms such as Eryngii Ganoderma, Shiitake, and Enoki
- ✓ Production of hybrid mother cultures of edible and medicinal mushrooms
- ✓ Commercial propagation protocols for cut flowers and potted ornamental plants
- ✓ Semi-industrial production (pilot) of microbial pigments obtained from *Monascus purpureus* and microalgae pilot-scale production

Distinctive scientific-technological capabilities of RIIB:

- ✓ Holding specialized workshops
- ✓ Specialized bioinformatics consulting
- ✓ Consulting for commercial production of edible-medicinal mushrooms ornamental plants and microalgae cultivation

Faculty: Research faculty includes nine full-time members with a variety of specialties including plant biotechnology, agricultural biotechnology, plant physiology, horticulture, microbial biotechnology, chemistry, and food science. Almost all of the faculty members have completed all or part of their doctoral studies in advanced countries such as Australia, South Korea, Japan, Spain, and Germany. Moreover, faculty members and experts from universities and research centers outside RIIB collaborate with RIIB in the form of scientific councils or research projects.

RIIB collaborating centers: Breast Cancer Research Center (Motamed Research Institute of ACECR), Applied Sciences Research Institute of Agriculture Ministry, Research Deputy of Horticulture of Ministry of Agriculture, Iranian Biological Resource Center, Research Institute of Environment, Razi Vaccine and Serum Research Institute, Mashhad Agricultural Research Center, Ferdowsi University of Mashhad, Mashhad University of Medical Sciences, Al-Zahra University, East and North Biotechnology Research Institute of Iran, Trade Union of Iranian Mushroom Producers, Mushroom cultivation and production companies across the country, ABFA Company, Khorasan Carpet Industrial Clusters and Related Private Companies.

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INDUSTRIAL FUNGI BIOTECHNOLOGY RESEARCH DEPARTMENT

Introduction : This research Group was established in 2002 and received its official approval from the ACECR Expansion Council for Research Organizations in 2004. The group's main mission is to conduct applied research in order to solve the problems of the manufacturing sector in the fields of edible, medicinal and industrial mushrooms.

Main activities: 1. Domestication, breeding, and formulation of substrates of mushrooms.
2. Molecular biology, biochemistry of substrate, production of functional food products from mushrooms.
3. Investigation of biological activities of extracts/compounds from medicinal mushrooms with an emphasis on their anticancer and immunomodulation properties.

Academic achievements:

- ✔ Publication of more than 60 scientific articles in peer-reviewed journals
- ✔ Writing 5 books, translating 1 book, and writing 1 chapter book
- ✔ Obtaining Iranian national patent for three hybrid breeds of white button mushroom (2006)
- ✔ Obtaining Iranian national patent for microbial color from *Monascus purpureus* (2011)
- ✔ Obtaining Iranian national patent for cultivation of *Eryngii* and *Enoki* mushrooms (2016)
- ✔ Deposition of more than 70 Iranian wild medicinal mushroom in GeneBank of NCBI (2019)

Technical knowledge:

- ✔ Domestication of wild-grown medicinal mushroom and their substrate formulation
- ✔ Producing hybrid strains and mother cultures of edible mushrooms
- ✔ Biomedical analysis of medicinal mushrooms, particularly anticancer research
- ✔ Production of mushroom-based drinks
- ✔ Enrichment of mushrooms with active folate and folic acid

Specialized services:

- ✔ Holding professional workshops and offering consulting services on mushroom production
- ✔ Production of mother cultures, fresh mushrooms, and mushroom-colonized substrates



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ARVAN COMPANY

(Arvan Green Elixir Technology Developers)

About the Company

Spawn mushroom production and supply laboratory has been established in 2002, moreover the group has practically proceeded commercial activities in the field of medicinal mushrooms (freshly) since 2014. At the end of 2018, the company was officially licensed to produce the Eryngii mushroom by ACECR. Currently, the total commercial activities of the Eryngii mushroom has been carried out at the related industrial unit as well as university greenhouse so that pure breeding production, spawn preparation and mycelium colonization of substrate (phase3) take place in the campus greenhouse and fruit production is carried out in an industrial unit located at 30 km of Mashhad-Chenaran road.

Culinary- medicinal mushrooms profile

Button mushroom have been produced, supplied and consumed in Iran for almost 30 years. In recent years, there has been an increasing demand for purchasing of specific and nutritional added value products. Among edible mushrooms, there have been various types of edible mushroom other than button mushroom which are in accordance with Iranian tastes, can be produced at low cost and most importantly have significant nutritional and pharmaceutical properties. These mushrooms are professionally known as specialty mushroom or culinary-medicinal mushrooms. Various species of edible Oyster mushrooms (*Pleurotus* spp) has been considered as one of the most important culinary- medicinal mushroom throughout scientific literature and now are ranked as second place in the world among commercial cultivated mushrooms. These mushrooms contain protein, vitamins and minerals considerably. They are highly recommended for overweight people as well as diabetic patient due to low calorie and slight amount of sugar and starch. Among all the types of Oyster mushrooms, there is King Oyster mushroom (*P.eryngii*), with colorful cap to light brown, which naturally grows in southern Europe, central Asia and South Africa. It has one of the largest fruiting bodies among the culinary fungi species. Pleasant aroma and proper baking quality make it one of the best quality edible mushrooms. This edible mushroom is commercially produced in many countries throughout the world including Japan, South Korea, Italy, Australia, North Africa and USA and is widely popular.

Achievement and accomplishment

King Oyster mushroom is gradually in favor of Iranian tastes and desire which are produced in less expensive substrate than button mushrooms. It has been initially evaluated and presented to the market by industrial fungi biotechnology group, and has been accepted by consumers. Following obtaining the patent and registering the brand "Eryngii" for king Oyster mushroom (the first one in Iran), In 2016, the process of purchasing, deploying essential equipment and manpower has been started. During the second six months of 2017, a mushroom production unit was given to group which located at 30 km of Mashhad-Chenaran road. The production capacity of edible mushroom is over 50 tons per year.



ARVAN



ORNAMENTAL PLANTS BIOTECHNOLOGY RESEARCH DEPARTMENT

Plant biotechnology has provided an opportunity to overcome many limitations in the field of plant breeding and propagation. Utilizing this technology can dramatically reduce the duration of breeding programs. In vitro plant tissue culture, production of haploid and double haploid plants, protoplast culture and fusion and genetic engineering of plants are some of the advances with this technology, which have greatly contributed to the development of breeding programs and the production of new varieties. Application of in vitro culture techniques can accelerate the process of producing healthy, disease-free plants and entering the global flower and vegetable market. Advances in plant biotechnology knowledge in recent years have provided the condition for manipulation of ornamental plants and making desired changes to produce desirable properties in them.

Research orientation:

In the industrial production of ornamental plants, tissue culture techniques have been used to produce uniform, disease-free plants. The bases of the majority of cut flowers come from European countries. Given the importance of producing these bases in the country, optimizing the in vitro conditions has been identified as one of the group's priorities to follow micropropagation guidelines for important ornamental plants. On the other hands, large companies in the industry have long-term plans for introducing new plants or breeding to produce new varieties in order to retain existing customers and encourage new consumers. Because of this important subject in floriculture industry, "improving the traits of ornamental plants through genetic modification using new technologies" and "breeding plants with different traits or producing new varieties of ornamental plants" are considered as other priorities of this department.

Main activities:

- ✔ Performing projects related to micropropagation of important ornamental plants with the aim of achieving commercial production protocols
- ✔ Improving the traits of ornamental plants through plant engineering using new technologies such as genetic engineering
- ✔ Producing and introducing new varieties of ornamental plants with new traits

Technical knowledge:

- ✔ Conducting research in the fields of molecular studies and genomics of ornamental plants with the aim of improving or changing their traits
- ✔ Producing virus-free plants in susceptible plants
- ✔ Providing scientific services to equip plant tissue culture laboratories
- ✔ Developing economically justified plans to encourage the private sector to invest in the industry

Specialized services:

- ✔ Holding courses and training and specialized workshops on plant tissue culture
- ✔ Providing the guidelines for commercial propagation of important ornamental plants



INDUSTRIAL MICROBIAL BIOTECHNOLOGY RESEARCH DEPARTMENT

Introduction:

This research department was established in 2012. The main mission of this department is based on applied biotechnology research in food, drug and environmental fields. Our focus is the production of valuable compounds and bioactive metabolites from microorganisms including bacteria, microalgae and fungi within the scope of bioeconomics

Main activities:

- ✔ Screening of natural pigments from local microorganisms
- ✔ Optimization and production of pigments in pilot scale
- ✔ Purification and stabilization of pigments
- ✔ Screening of bacteria based on enzyme production

Achievement:

- ✔ Publication of more than 15 scientific articles in peer-reviewed journals
- ✔ Translating 2 books
- ✔ Obtaining 3 Iranian national patents for production microbial pigment from *Monascus purpureus*
- ✔ Doing of more than 30 research projects on microorganisms in cooperation with other research centers and companies

Technical knowledge:

- ✔ Pigment production from *Monascus purpureus* in pilot scale
- ✔ Screening of local microalgae pool in Khorasan Razavi Province
- ✔ Immobilization of microorganisms
- ✔ Industrial wastewater treatment by microalgae
- ✔ Screening of enzyme producing bacteria

Specialized services:

- ✔ Holding technical workshop on different subtitles of bioinformatics and microalgae production
- ✔ Offering consulting services in microbial metabolite production stabilization and purification



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STEM CELLS AND RESTORATIVE MEDICINE RESEARCH GROUP

Regarding the importance of stem cells and their prominent role in advanced therapies and the need to localize the technology using these cells with the aim of achieving the highest efficiency in cell therapeutic processes, Khorasan-e Razavi Stem Cells and Restorative Medicine Research Group was established in 2007 (1386) in Mashhad with the help of a group of academics and experienced professionals. In 2013 (1392), this group was able to build and utilize the first standard clean room with the aim of cultivating and proliferating stem cells for utilizing in the treatment of human degenerative diseases in Khorasan-e Razavi province. Advances in plant biotechnology knowledge in recent years have provided the condition for manipulation of ornamental plants and making desired changes to produce desirable properties in them. The specialized fields of activity of this research group in the form of 6 research teams are as follows:

1. Bone and cartilage team with the goal of repairing bone lesions (that do not heal) and cartilage lesions (arthritis)
2. Lipid team to enrich adipose tissue for stem cells to treat malignancies such as cutaneous lesions
3. Skin team with the goal of Vitiligo cell therapy and its enhancement, creating specialized keratinocyte cell bank for homologous transplantation, creating quality control team and translation management for cGMP program development, producing commercial human skin
4. Heart diseases cell therapy team using stromal fraction cells and mesenchymal stem cells
5. Stem cell implantation improvement team with the goal of conducting research on improving homing, providing stem cells
6. Blood malignancies molecular diagnosis team with the aim of increasing the range of specialized services of ACECR Central Laboratory, as well as providing a variety of educational and research services in flow cytometry and Real Time-PCR techniques.

Vision :

One of the top five researches is the translational research in the field of restorative and molecular medicine in the region and offering specialized knowledge-based services for cell therapy and cancer diagnosis in Khorasan-e Razavi province.

Capabilities and activities performed:

- * Producing and developing 6 knowledge-based products for cell therapy
- * Providing health services for therapy and cancer diagnosis
- * Providing stem cell research and consulting services to students and collaborators of service universities and various scientific and service institutes
- * Offering cellular and molecular facilities to students and professors for research projects and clinical trials
- * Publishing more than 70 articles in domestic and foreign scientific journals and 2 compiled and translated Farsi books
- * Holding three national and international congresses of stem cells and reconstructive medicine
- * Holding the first comprehensive modular course in the field of molecular techniques modular



Phone: 051-31997452

BLOOD-BORNE INFECTIONS RESEARCH CENTER

Due to the certain geographical, social and health conditions of Khorasan-e Razavi province and with the aim of designing and conducting fundamental and applied research in the fields of common and endemic infections in the region, Khorasan-e Razavi ACECR formed "the Behavioral and Infectious Diseases Research Group" in 2004 (1383). In July 2008 (Tir 1387), this group received the official approval of ACECR Expansion Council for research organizations with the new title "AIDS, HTLV and Viral Hepatitis"; it also received the definitive approval in February 2011 (Bahman 1390). In December 2016 (Azar 1395), this group obtained the official approval from The Ministry of Health and Treatment's Expansion Council of Medical Sciences Universities.

Research orientation:

- ✓ Drawing the epidemiological pattern of blood borne infections, including, viral hepatitis, HIV / AIDS and HTLV
- ✓ in the general population and specific groups
- ✓ Knowledge and attitude studies especially in high risk groups for blood borne infections
- ✓ Identifying the pathogenic mechanisms of blood-borne infections through basic science studies
- ✓ Localizing specialized knowledge for offering clinical services related to blood-borne infections
- ✓ Appropriate culture building and raising the awareness and knowledge of people and medical
- ✓ community regarding blood-borne infections

Capabilities and activities performed:

Designing and implementing basic and applied research related to blood-borne infections
Designing and developing research questionnaires for knowledge, attitude and practice studies (KAP studies)
Statistical analysis of research data
Designing and holding specialized workshops on research methodology, resource searching and statistical software
Designing and conducting training programs on blood-borne infections (conferences, seminars, etc.)

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b b i . h e p . i r

SPECIALIZED SERVICE CENTER FOR MEDICAL DIAGNOSIS AND PATHOLOGY

Khorasan-e Razavi ACECR as one of the reference medical diagnostic centers in North-east of Iran, has been provided desirable diagnostic laboratory services in holy city of Mashhad since 1981 (1360). Our mission is to provide all citizens and passengers with qualified and standard laboratory services in a cost-effective manner. Moreover, underprivileged and patients with specific infectious diseases (HIV, Hepatiti and etc) can benefit from our services. Currently, we provide our services in 4 diagnostic centers, and soon we will extend it to 5 medical diagnostic sites.

Among the distinctions between this center's laboratories and other laboratories, especially private laboratories, is the use of governmental

Main activities:

- ✔ Cellular and molecular genetics
- ✔ Pathology
- ✔ Hormonology
- ✔ Hematology
- ✔ Immunology
- ✔ Serology
- ✔ Microbiology
- ✔ Biochemistry
- ✔ Molecular Biology
- ✔ Mycology
- ✔ Parasitology
- ✔ Genetic counseling

Outstanding features of the center:

- ✔ Having more than 175 specialists, faculty members and experts
- ✔ Having advanced and up-to-date equipment
- ✔ Potential ability to carry out laboratory and research activities
- ✔ Having a sister specialized clinic service center
- ✔ Close relationship with academic centers
- ✔ Located in an urban area with proper public access



Contact us: Central Laboratory of Medical Diagnosis and Pathology: Razi Street, Between Dah-e Dey Square and Imam Reza Hospital, Mashhad, Iran. **Phone:** 051-38548026 - 38540000 **Fax:** 051-38511116

Laboratory No.2 of Medical Diagnosis and Pathology: Next to Sabzevari Mosque - Mofateh 4 - 30 Meters of Tolab, Mashhad, Iran. **Phone:** 051-32768444 - 32731177

Neishabour Laboratory of Medical Diagnosis and Pathology: Next to Blood Bank - Ghavami Street - Imam Khomeini Street 1, Neishabour, Iran. **Phone:** 051-43333775 - 43333180 **Fax:** 051-43337042

Website: jdmlabs.ir

SPECIALIZED INTERNAL MEDICINE CLINIC

Considering the clinical significance of Blood-borne infections, establishment of a specialized medical center for management, control and prevention of the related diseases is greatly needed. Hence, Specialized Internal Medicine Clinic of Academic Center for Education, culture and Research (ACECR), Razavi Khorasan Branch was founded in Mashhad, northeast of Iran, in the beginning of spring 2016. Mashhad, as the second large city of Iran with three million people, attracts more than 20 million tourists and pilgrims annually.



Mission and Vision:

Our mission is the delivery of the best specialized services in the field of internal medicine with a focus on hepatitis and liver diseases by employing of expert physicians and skilled staffs.

Our vision is to be recognized as the best center of specialized services for hepatitis and liver diseases in the east of Iran.

Services:

- ✔ Daily visit of the patients by various specialists and subspecialists (Internal medicine, infectious diseases, gastroenterology, endocrinology, rheumatology, cardiology, allergy and respiratory diseases, and preventive medicine)
- ✔ Invasive and non-invasive procedures such as endoscopy, colonoscopy, spirometry, echocardiography, etc.
- ✔ Counseling and education of patients with viral hepatitis, HIV/AIDS, HTLV-1 infection, and STIs
- ✔ Nursing services including injections, dressing and bandage, ECG and vaccination

Address: Next to ACECR Central Laboratory - West Razi Street - Between Dah-e Dey Square and Imam Reza Hospital - Mashhad **Phone:** 051-38548026 – 38540000 **Fax:** 38521116

DENTAL CARES SPECIALIZED CLINIC

Academic Center for Education, Culture and Research (ACECR) has launched a Specialized Dental Clinic in 1987 which was one of the first and one of the fewest in the region (North-Eastern Iran) at that time. Armed with a large group (n:60) of skilled dentists, specialists and faculty members, this clinic has become the pioneering provider for the best practical care and treatment in the dentistry field, focusing on the most complicated cases which are referrals from other clinics across the north-eastern states and even neighboring countries. Depending on the patient's needs, care may include one specialty or more than one in a multidisciplinary approach.

Services:

- ✓ Providing high-ranked dental care in the following fields:
Restorative and Cosmetic dentistry, Endodontics, Orthodontics, Pedodontics, Prosthodontics, Oral and maxillofacial surgery, Periodontics, Dental implant, Oral Medicine, laser in dentistry and Dental Trauma

It is one of the fewest Referral Center for:

- ✓ Dental Traumatic injuries
- ✓ Open apex treatment
- ✓ Treatment of patients with cleft lip and palate
- ✓ Patients with systemic diseases, pregnancy and special needs who seek emergency dental treatments

Activities:

- * Contributing to research activities particularly on Dental Trauma field
- * Supervising post/under graduate theses and organizing educational courses
- * Presenting lectures, educational courses and posters in national and international seminars
- * Collaborating with several charity organizations and providing free health care to the low-income patients

Achievements:

- * Holding the first international conference on Dental Traumatic Injuries in 2015
- * Publishing 14 scientific-research articles in peer-reviewed journals
- * Holding 4 specialized workshops on IDI dental implants (certification)
- * Holding 2 specialized workshops on laser application in dentistry (certification)
- * Holding 8 accredited training courses for dental assistants
- * Presenting lecture about Dental Trauma Management for teachers and school staff in Khorasan-e Razavi Dental Care Clinic in cooperation with the General Office of Education in November, 2018



Location: Between Aref and Parastar, Ahmadabad Street, Mashhad, Iran

Phone: 051-38410907 - 38412222

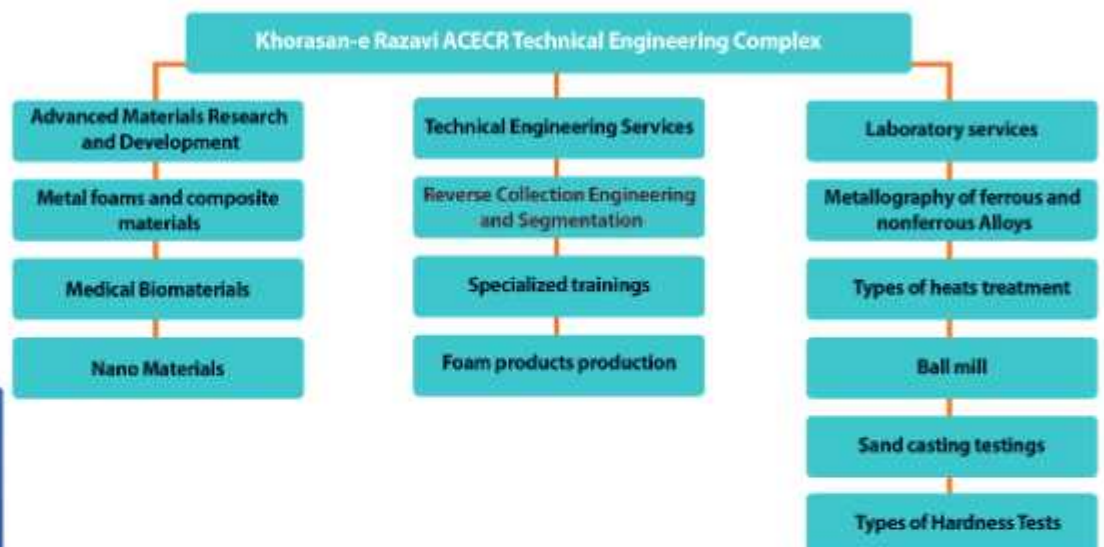
Fax: 051-38468483

<http://jdm dentalclinic.ir>

TECHNICAL ENGINEERING COMPLEX

During the years 1984 and 1985 (1363 and 1364), Technical Engineering Service Center was established and then in 2004, following the official approval of Materials and Metallurgy Research Group from ACECR Central Office, its research activities became more targeted. This group's field of activity includes novel materials such as composites, biomaterials and nanomaterials.

Generally, all activities of this complex can be summarized in the following flowchart.

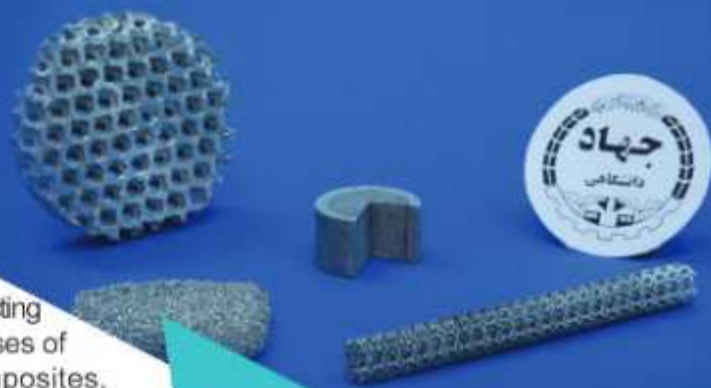


The main missions

- 1- Effective linkage of industry and university to national self-sufficiency and quality improvement
- 2- Define and develop technical knowledge of manufacturing high-tech products according to internal requirements
- 3- Solving the industry problems with world-class knowledge and new developments
- 4- Training specialized and efficient experts according to industry needs



MATERIALS RESEARCH GROUP



Materials research group was able to obtain the official and then definitive approval from ACECR Central Office in 2005 and 2012. This group's main field of activity is conducting research and studies on developing manufacturing processes of advanced materials such as metallic foams, metal composites, biomaterials and nanomaterials. In addition, obtaining and conducting research and reverse engineering projects as employer-centered projects in petroleum, gas, petrochemical and power industries are also on the group's agenda.

Research Orientation:

Capabilities and activities performed:

- * Manufacturing metal foams used in bumpers, sound insulation, military industries, automotive industries, etc.
- * Producing aluminum-based composite billets (ingots)
- * Gold plating and electroless nickel plating on a variety of ferrous and nonferrous alloys
- * Performing color anodizing and type 3 anodizing on titanium alloys
- * Performing conventional, color and hard anodizing on aluminum alloys
- * Designing and rapid prototyping of different pieces by 3D printing method
- * Precision casting of all kinds of nonferrous metals
- * Recovery of aluminum scraps and converting them to ingots with the highest efficiency and quality
- * Consulting on the design and production of advanced materials, especially metal foams and biomaterials
- * Consulting on selecting materials production, identification and selection methods
- * Complete reverse engineering of pieces and assemblies to compile technical knowledge of production and assembly
- * Consulting on determining the failure factors of metal components, identification methods and their prevention
- * Consulting and inspecting the manufacturing process of pieces in terms of metallurgical parameters during production
- * Analyzing the results of destructive and non-destructive tests
- * Simulation of casting through valid software and providing optimal casting plan
- * Consulting on corrosion and oxidation of metal pieces in corrosive environment, identification and selection of corrosion resistant materials
- * Performing various tests on materials such as metallography, hardness, mechanical properties and etc. with analyzing the results
- * Teaching all kinds of casting simulation software
- * Teaching the principles of metallography and microstructural examination
- * Designing and commissioning of semi-industrial aluminum foam production line using melting method
- * Designing and commissioning of semi-industrial production line of copper, nickel and aluminum foams by casting and electrochemical method
- * Designing and commissioning of gold and electroless nickel plating line
- * Designing and commissioning of aluminum and titanium anodizing line



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TECHNICAL ENGINEERING SPECIALIZED SERVICE CENTER

From the years 1984 (1363) following the the need for conducting applied research to achieve self-sufficiency and increase the industrial scientific knowledge The Mashhad ACECR, established a center to conduct such research. In 1995 (1374), this center started producing fodder compress Baler machine as an applied research project which was very successful with the help of the center's hardworking staff and in addition to eliminating the country's need to import the machine, also earned the third place at the 10th Khwarazmi Festival. In 2004 (1383), the center obtained the ISO 9001-2000 certification from MIC UK.

Capabilities and engineering services available:

- * Localizing and compiling technical knowledge of new technologies
- * Designing and manufacturing key pieces needed for strategic industries
- * Providing expert advice in the fields of metallurgy and mechanics (corrosion, heat treatment, coatings, welding)
- * Sampling of industrial machinery sets and reverse engineering methods
- * Casting of light and medium cast iron and aluminum pieces (modifying 356 aluminum alloy structure)
- * Machining complex pieces with the help of precise equipment such as CNC milling, radial drilling and so on.
- * Offering laboratory services such as metallography and hardness testing of ferrous and non-ferrous metals
- * Simulation of freezing process of industrial pieces using specialized software
- * Teaching engineering software (CAD / CAM / CAE) and casting process simulator software

OFFICE OF TECHNOLOGY COMMERCIALIZATION AND EMPLOYMENT OF GRADUATES

Mashhad ACECR Technology Commercialization and Employment of Graduates Department has started working since 2004 (1383) to provide a platform for commercializing and converting research and research projects into multiple mature research plans, ideas and operational plans. The unit has been able to carry out research and applied projects in various fields of employment, technology commercialization and empowerment. In recent years, the unit has received the approvals of Innovation and Center and Health Technology Development Center to support talented, creative and innovative students and graduates with the aim of entrepreneurship development by creating appropriate supportive platforms for the cultivation of new and applicable ideas.



Orientation of the Office of Technology Commercialization and Employment of Graduates

1. Commercializing mature technologies for ACECR by establishing knowledge-based companies and institutions
2. Organizing the career guidance system and empowering graduates in their selected fields with the support and coordination of relevant authorities
3. Improving the entrepreneurial culture and self-belief spirit and promoting successful science and technology models with emphasis on the academic community

Capabilities and activities performed:

1. Offering to implement research, educational, and information services for graduates
2. Offering scientific and consultation services to employment development organizations
3. Defining, compiling and presenting scientific and practical solutions for employment development and empowerment in macro programs and policies
4. Managing and implementing large-scale projects in the field of employment
5. Predicting appropriate mechanisms to commercialize technology and to utilize the research results
6. Cooperation in semi-industrial production and commercialization of all activities and programs related to the field of technology development that have passed the research and prototype development stages in ACECR research institutes and units.
7. Organizing, increasing and improving the structures and services available in parks and development centers
8. Establishing business consulting groups and commercialization in the units
9. Preparing indigenous and modern employment patterns
10. Compiling employment and investment document of Khorasan-e Razavi province
11. Preparing tourism development roadmap based on technology and innovation
12. Compiling the document for economic development and rural employment
13. Developing a plan for home business organization and development
14. The process of economic empowerment of female-headed households based on the new pattern of home business development



MASHHAD HEALTH TECHNOLOGIES DEVELOPMENT CENTER

This center started its activities since 2019 (1398) with the strategy of providing the platform and financial spiritual supporting of the use of new technologies in the field of health in line with ACECR research, directing the science and technology cycle and supporting open innovation in order to play an effective role in the field of health and information technology, supporting and providing expert advice on health technology related issues and organizing technology development processes in health products and equipment across the

tial of researchers in the province. The center is active in the fields of food and medicinal plants, health tourism, medical materials and engineering and so on, with the aim of supporting ACECR faculty members, technology companies and units, students and so on.

Objectives:

- ✓ Optimal use of the actual and potential capacities of Khorasan-e Razavi ACECR to transform the idea of affiliated research centers and to convert it into a product and commercialization in line with knowledge based resistance economy
- ✓ Supporting product-based technical plans of professors and students of Khorasan-e Razavi ACECR Research Institutes and production and commercialization of products in collaboration with knowledge based companies

The center's services and supports

- ✓ Financial and spiritual support of the center's units with regard to Technology the activities of technological units
- ✓ Providing legal support to accelerate the growth of these units
- ✓ Offering services and advices needed by units to convert the new ideas into products and commercialization
- ✓ Supporting and monitoring the growth of units and continuous analysis of achievements aimed at increasing the efficiency of the development center
- ✓ Supporting and monitoring the activities of technology units for the realization of main ideas
- ✓ Establishing technology units, in the primary development section (if needed)
- ✓ Establishing research and development units for domestic and foreign production companies, in the development center to link R&D departments of large corporations and international technology centers with students and knowledge-based companies in order to achieve "knowledge-based industry and industry-based knowledge"
- ✓ Holding and participating in specialized exhibitions
- ✓ Holding special training workshops in the fields of technology and commercialization



ACECR

Khorasan Razavi

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