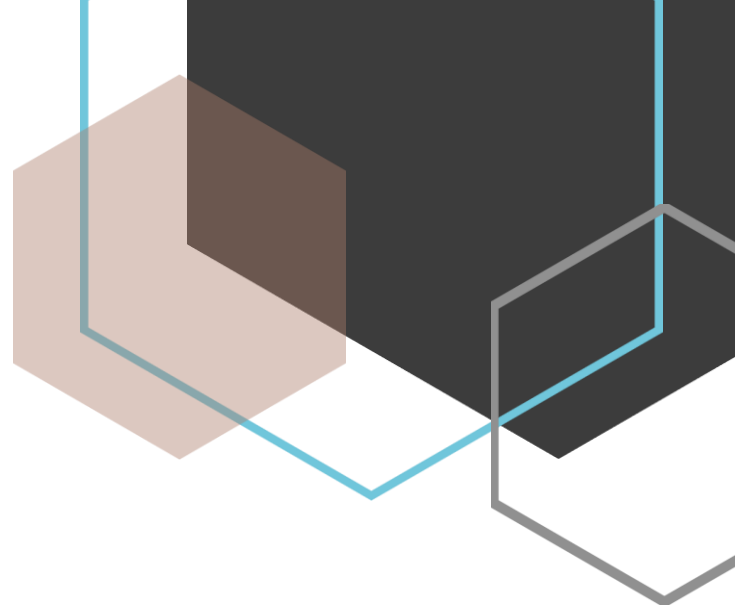




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SCREENING REPORT

ENTREPRENEURSHIP, INNOVATION & STUDENTS TALENT DEVELOPMENT

UNIVERSITY OF MADRAS, INDIA

Integrating Talent Development into Innovation Ecosystems in Higher Education

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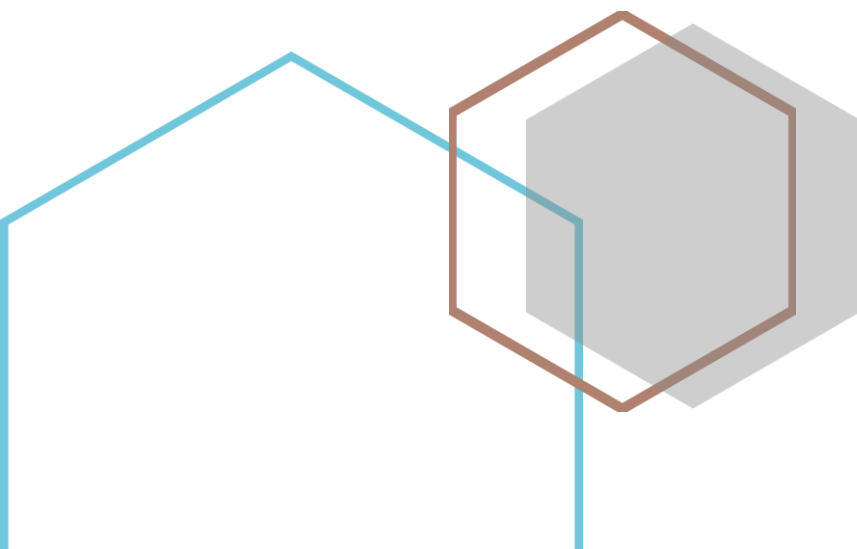


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The report aims at providing a clear picture of the University's starting conditions and capacities in the areas of graduates' employability, innovation capacity and talent development. The reports points out the strengths and weaknesses of the institution in these fields. It has been developed by external experts, representative of the INNOTAL partners.

The report can provide insights into the following broad elements of organizational performance of the University:

- organizational motivation, including mission, prevalent culture, incentive structures and support structures
- organizational capacity (structure, physical and financial resources, technology resources, human resources
- leadership, decision-making process, management and inter-organizational linkages);
- c) organizational performance (financial viability, efficiency, effectiveness, relevance)
- external environment (administrative, legal, social, cultural, economic, political, etc.).

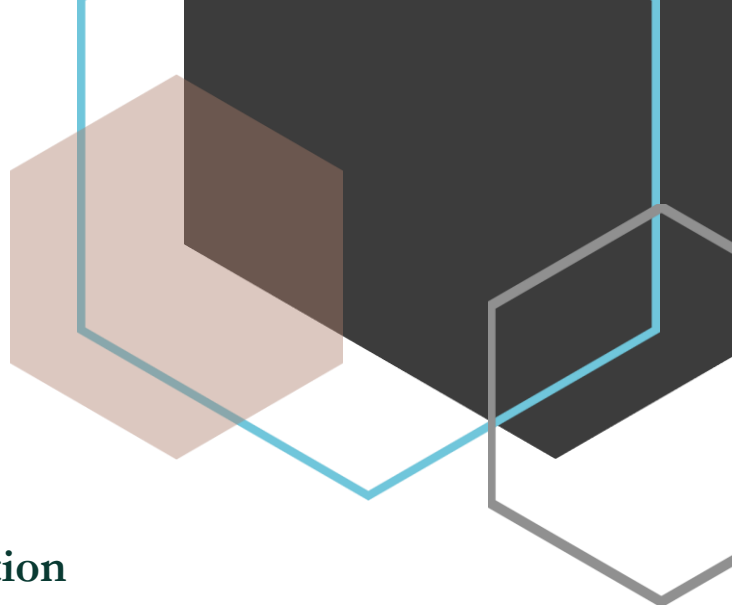
Editor:

Gergana Cisarova-Dimitrova,
European Center for Quality
(Bulgaria)

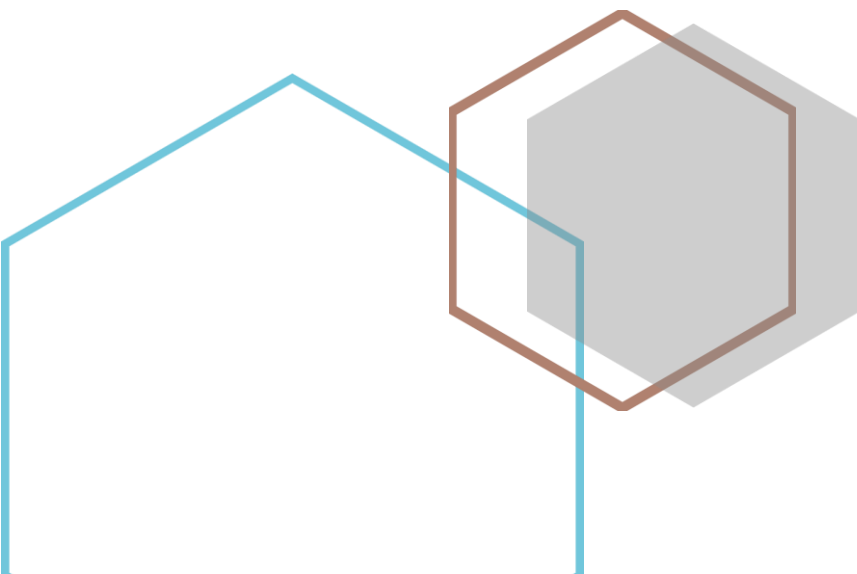


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Introduction



CONTEXT

This report is part of the project's overall attempt to build the capacity of University of Madras to promote graduates' employability and talent and to engage in innovation benefitting both the institution itself and the broader society. It shall provide information and relevant data about the starting conditions and capacity of University of Madras and it shall offer assessment and recommendations for future improvement.

The report has been developed on the basis of a Scorecard elaborated in the frame of the project. In order to allow both replication and update of the overall assessment, information is provided for each indicator. Where available, officially published data has been used. Where official information has not been available, data has been provided by responsible offices at the University of Madras itself.

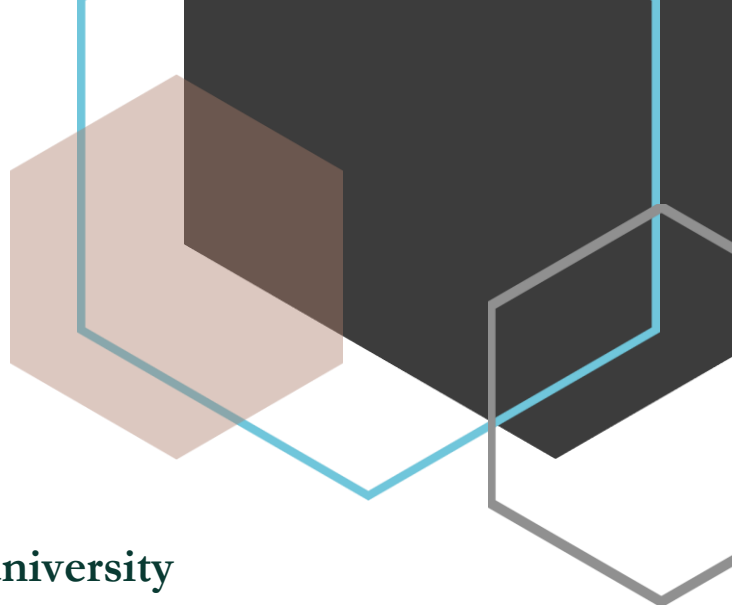
SCOPE

This Report is produced in the frame of the project's first stage, which is focused on preparatory research and understanding the context in which further capacity building activities shall take place. The purpose is to provide an external assessment of:

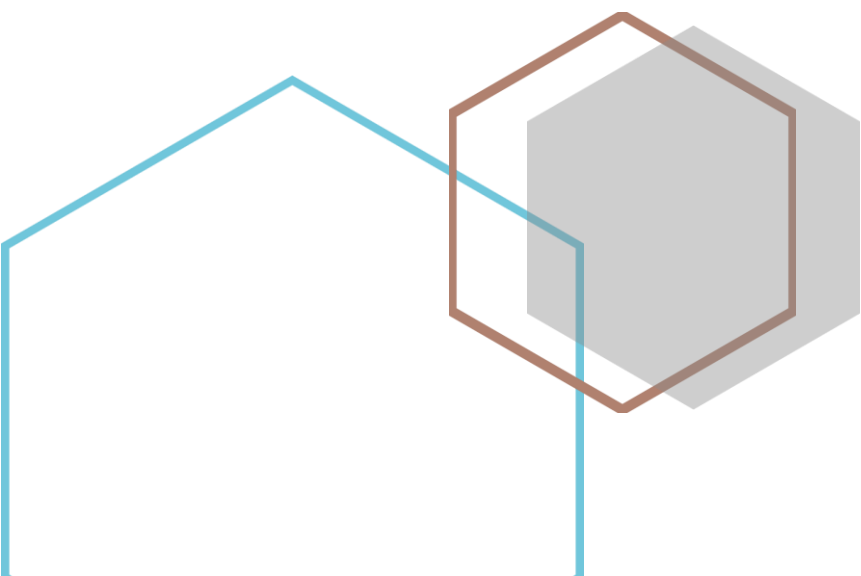
- University capacity to provide entrepreneurship education across various disciplines
- University capacity for innovation
- University capacity for promoting graduates' employability and developing students' talent

The reports aims to provide a clear picture of the University's starting conditions and capacities related to graduates' employability, innovation and talent development. The report has been developed on the basis of the scorecards developed in the frame of the INNOTAL project.





Profile of the university



ESTABLISHMENT

The University of Madras is one of the oldest universities in India. It was established in 1857 and modelled on the London University. It is the mother of almost all of the old Universities of south India. The University Grants Commission (UGC) has recognized the University of Madras as a state university. Its area of jurisdiction has been confined to three districts of Tamil Nadu.

The university has grown throughout the years. In 1912, it had just 17 University Departments, 30 teachers and 69 research scholars. Currently, it has 19 Schools and 87 Departments of post-graduate teaching and research. It was envisaged as an affiliating university and currently it has 116 Affiliated Colleges and 53 Affiliated Research Institutions. 9 of those Colleges are included in the top 100 list of the 2017 National Institutional Ranking Framework (NIRF) of the Indian Ministry of Human Resource Development. Many central and state-funded Research Institutions are affiliated to the University for their M.Phil. and Ph.D. programs.

The University of Madras has signed Memoranda of Understanding with 99 foreign and 25 Indian Universities. Notably, such Memoranda have also been signed with 21 business organizations from the industrial and services sector. Nearly 141 sponsored research projects funded by various agencies are being carried out in the University departments. The University has been collaborating with Indian and Foreign Universities to promote student and teacher exchange programmes.

In 2014, the National Assessment and Accreditation Council (NAAC) reaccredited the University at the A level. As of March 2018, the University has a 3.32 NAAC score. In the NIRF university ranking from 2017, University of Madras was ranked 41st in India, while in the 2018 ranking it rose to 18th place.

The University of Madras was also among the first five universities in the country to receive recognition from the University Grants Commission (UGC) as a “University with Potential for Excellence”. A number of Departments and Centres have received recognition by national funding agencies. Under the Special Assistance Programme scheme, three of them have been supported as UGC Centres for Advanced Studies, 12 as UGC Departments of Special Assistance. 18 Departments have been supported under the FIST Programme of the Department of Science and Technology at the Ministry of Science and Technology in India. Under the Committee on Strengthening of Infrastructure for Science and Technology (COSIST) Program, two departments have been supported. Two departments have been supported under the Assistance for Strengthening of Infrastructure for Humanities & Social Sciences (ASIHSS) Program. Six centres at the University have been supported under the UGC Innovative Centres Program. Two autonomous colleges have been recognized as colleges with Potential for Excellence.

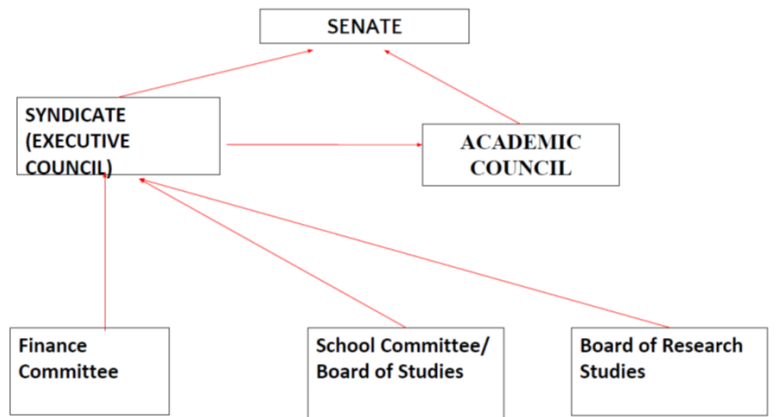


MISSION AND VALUES

The objectives of the University of Madras are inclusive growth and excellence, and its vision is that of providing quality and socially relevant education, promoting synergy between society and industry, and building students’ capacity. It feels it has the moral obligation to play a pro-active leadership role for achieving quality in the Indian higher education system.

- Organizational structure

The University of Madras has the following structure:



His Excellency the Governor of Tamil Nadu is the Chancellor of the University

The Vice-Chancellor is the Principal Executive Officer. S/he is appointed for a fixed term. The Registrar, who is the Secretary of the Syndicate, is the Chief Administrator of the university and custodian of all records. Examinations are managed by the Office of the Controller of Examinations.

- Academic structure

The University of Madras provides postgraduate programs through its Departments and undergraduate programs through its Affiliated Institutions which are spread over the districts of Chennai, Thiruvallur and Kancheepuram. There are 87 University Departments of study and research, which operate over 6 campuses and are organised into 19 Schools:

- School of Historical Studies
- School of Social Sciences
- School of Political and International Studies
- School of Economics
- School of Philosophy and Religious Thought
- School of Fine and Performance Arts
- School of English and Foreign Languages
- School of Tamil and other Dravidian Languages
- School of Sanskrit and Other Indian Languages
- School of Management Studies



- School of Mathematics, Statistics, Computer Science
- School of Information and Communication Studies
- School of Earth and Atmospheric Science
- School of Chemical Sciences
- School of Physical Sciences
- School of Life Sciences
- School of Basic Medical Sciences
- School of Nano Science and Photonics

Each School offers postgraduate courses in respective specialisation, part time and full time Ph.D. Programmes, Diploma and Certificate Programmes.

The following specialized Centres are operational within the different Schools:

- Centre for Infrastructural Management Studies
- Centre for Water Resource Management
- Centre for Cyber Forensics and Information Security
- Centre for Environmental Sciences
- Centre for Natural Hazards and Disaster Studies
- Centre for Ocean and Coastal Studies
- Centre for Population Studies
- JBAS Centre for Islamic Studies
- National Centre for Nanosciences and Nanotechnology
- National Centre for Ultrafast Process
- Rajiv Gandhi Chair in Contemporary Studies
- UGC - Centre for South and Southeast Asian Studies
- Centre for Stem Cell Research
- Centre for Herbal Sciences
- Centre for Endangered Languages
- Centre for Thirukkural Research
- Anna Centre for Public Affairs
- Dr. Ambedkar Centre for Economic Studies

Research activities of the university focus on the fields of Arts, Humanities, Science, Basic Medical Sciences, Management and Technology.

In response to the unmet demand for higher qualifications, the University offers both undergraduate and postgraduate programs through the Institute of Distance Education.



SIZE OF THE UNIVERSITY

- Degree of autonomy

In 2018, in line with the recent trend toward strengthening accreditation and increasing university autonomy, the UGC granted Grade II autonomy to the University of Madras on account of its high standards of excellenceⁱ. Maintaining Grade II autonomy is preconditioned on the university continuing to have a NAAC accreditation score between 3.01 and 3.49 or a NIRF rank between 51 and 100, for 2 years continuouslyⁱⁱ.

The Grade II ‘autonomy’ status means that the University is free to determine its admission procedure, fee structure and curriculum, introduce new courses (including skills courses), create new departments and launch new programmes, appoint foreign faculty, accept foreign students and offer variable incentive packages for faculty. Grade II institutions, however, need the UGC’s approval to create off campuses, research parks and incubation centres, centres linking education with society, as well as to enter into collaborations with foreign universities or introduce online distance learning programmes. Autonomy is largely preconditioned on the university not demanding funds from the government. This could result in situations in which – being unable to fully finance a new activity – the university would still need government approval.

- Number of students (Bachelor, Master and PhD):

As of 2018 the University of Madras has 2445 students. A much larger number of students are enrolled in affiliated colleges (over 10,000 in 2018).

- Number of academic staff (teaching and research):

During the 2016-2017 academic year, the university of Madras had 263 permanent teaching staff plus 116 teaching staff on contract and 12 persons teaching staff at the Institute for Distance Education.

- Number of administrative support staff:

A total of 1007 administrative and supporting staff (non-teaching staff) are working at the University.

- Budget

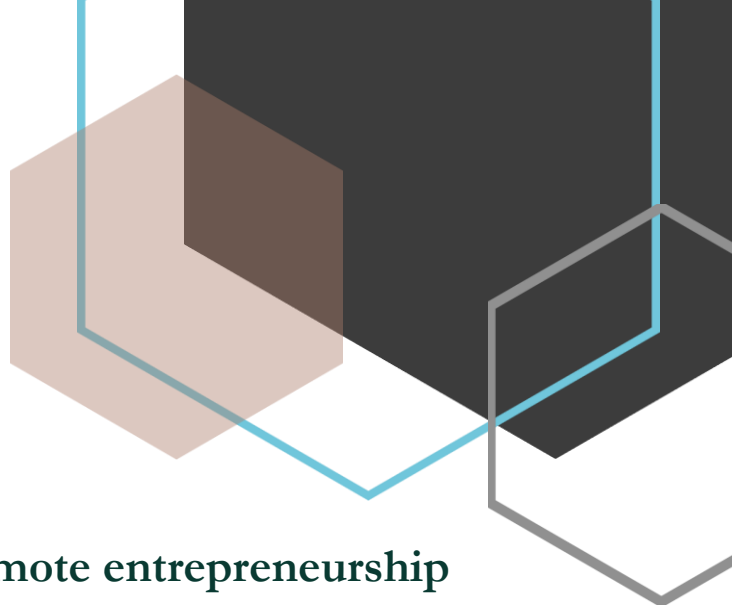
During the 2016-2017 academic year, the University’s total annual expenditure was 14,941,121 USD.

During the 2015-2016 academic year, the University’s total annual expenditure was 13,534,129 USD.

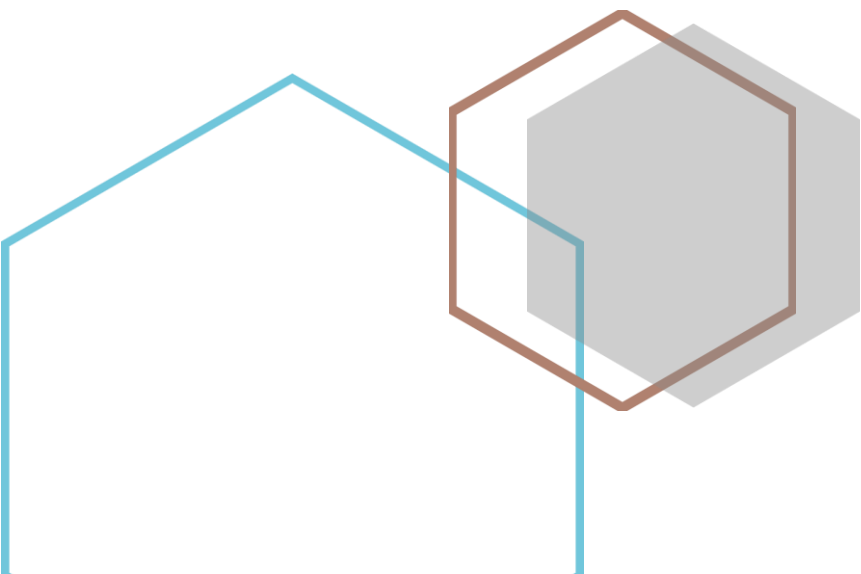
ROLE OF THE UNIVERSITY IN ITS REGION

The University perceives its role as facilitating access to education and skills, not just through its own programs but also through affiliated institutions. The university also engages in extension-based research and education activities that benefit the local community, the region and society at large.





Capacity to provide and promote entrepreneurship education



**PERFORMANCE IN
THE AREA OF
ENTREPRENEURSHIP
EDUCATION**

2.1. Relative number of bachelor/master/post-graduate programs offering entrepreneurship courses/training

The programs directly focused on entrepreneurship represent only 0.97% of all the study programs. However, there are other programs that include core and elective courses on Entrepreneurship. Examples of such programs are: MA in Human Resource Management, Master of Business Administration, MA in Lifelong Learning.

2.2. Relative number of students in bachelor/master/post-graduate entrepreneurship programs

38.99% of the students at the University of Madras are enrolled in individual core or elective courses on Entrepreneurship.

2.3. Relative number of staff teaching entrepreneurship

15.32% of the teaching staff at the University of Madras is involved in teaching courses related to Entrepreneurship.

2.4. Relative number of entrepreneurship-related research projects

12.28% of the research projects at the University of Madras are related to Entrepreneurship.

2.5. Relative number of bachelor/master/post-graduate entrepreneurship courses in which case studies or study visits are used to enhance learning

Case studies or study visits are used to enhance learning in 57.85% of the bachelor/master/post-graduate entrepreneurship courses.

2.6. Inclusion of support for entrepreneurship and entrepreneurship education in the mission or core strategy of the university

There is no unified document stating out in detail the mission, vision or long-term strategy of the whole university. However, the university maintains structures aimed at linking education and research to industry and society. This suggests that Entrepreneurship is de facto treated as part of the development strategy of the university.

2.7. Existence of an institutional strategy on entrepreneurship education

There is no such strategy explicitly developed. In particular, there is no strategy for including elements of Entrepreneurship education (e.g. specialized Entrepreneurship modules) across many study programs. There are foundation courses on Entrepreneurship in only a very small number of Programs.

Within the University of Madras, the Departments of Commerce and Management Studies appear to have the clearest vision on entrepreneurship education. The University has received a special grant from the State Government to establish an Entrepreneurship and Skill Development Centre (ESDC) at this Department.

**ENTREPRENEURSHIP
-SUPPORTING
POLICIES AND
CULTURE**



2.8. Involvement (official or unofficial) of employers or labour market institutions in:

- curriculum development
- teaching
- participation in decision-making or consultative bodies at institutional level

The University of Madras involves employers in all processes listed above.

2.9. Relative number of staff that has participated in entrepreneurship training

15.84% of the staff has participated in Entrepreneurship training. The Human Resource Development Centre at the University provides Entrepreneurship courses for faculty members.

2.10. Relative number of industry or business practitioners involved in delivering entrepreneurship courses in bachelor's/master's/post-graduate degree study programs

The relative number of industry or business practitioners involved in delivering entrepreneurship courses in bachelor's/master's/post-graduate degree (to total number of faculty teaching entrepreneurship courses in bachelor's/master's/post-graduate degree) is 4.48%. Industry experts are regularly invited to provide specialized inputs into the teaching and learning processes. Special funds for this purpose are allocated to Departments every year.

2.11. Relative number of university employees who also have (temporary) work contracts in industry/business

None: faculty members are not allowed to have work contracts in industry. While not on leave, faculty members are only allowed to provide consultancy for business.

2.12. Existence of opportunities for staff mobility (including adjunct faculty) across the university-business divide

Faculty members are allowed leave, during which they can work in industry. It is not unusual for faculty to take this opportunity.

2.13. Existence of university entrepreneurship centres supporting university-business relations and entrepreneurship in general

The University of Madras operates a University Industry Community Interaction Centre. The Centre was established in 1997 and it has the following objectives:

- To create a database on the needs of industries in the country and launch an Industrial Associateship program
- To coordinate R&D projects between University departments and Industries in the area of product/process development and

technology transfer

- To assist in signing of Memorandums of Understanding and in the development of IPR/patents by the University faculty
- To offer testing/material characterization and certification facilities
- To offer training programmes for small/medium scale industries, namely certificate/diploma courses relating to professionally oriented fields
- To develop specialized continuing education programmes for industrial and social action agencies.

The Centre fulfils the University's mission to share knowledge and expertise and to help the community benefit from knowledge resources available within the Departments. On the other hand, the consultancy projects help generate revenue for the University and the faculty.

The University is the nodal Centre for the Techno-entrepreneur Promotion Programme (TePP) of the Department of Scientific and Industrial Research at the Government of India. The TePP Centre at the University of Madras works to identify and fund innovative projects under the TePP scheme. A total of 34 projects have been facilitated.

2.14. Provision of support to bachelor/master/post-graduate students for access to internship and/or placement schemes

In all study programs, the completion of an internship and/or a placement scheme is a requirement. Students are provided support to access internships and/or placement schemes. The University has a centralized placement centre with dedicated staff and infrastructure facilitating the linkage between industries and the students of all the campuses - the University Students' Advisory Bureau (USAB) is responsible for offering placement services to graduates of the University. Campus interviews by various companies and institutions are organized. Companies that have participated in recruitment drives at the University include Wipro Technologies, Cognizant Technologies, ITC Limited, HCL Technologies Limited, Tata Consultancy Services Limited, Advinus Therapeutics Private Limited, Agility Global Integrated Logistics, Future-tec Technologies Private Limited, Life Insurance Corporation of India, Indian Air Force, Everonn Education Limited, Royal Sundaram Alliance General Insurance and HDFC Bank. In addition to the centralized campus recruitments, some departments such as Management Studies and Chemistry organize their own specialized campus recruitment drives.

In recent years, the number of students who have found a job through campus placements has been increasing. In the 2016-2017 academic year, over 250 students of the university found a job through placement.



ADAPTATION OF
TEACHING METHODS
TO FACILITATE
ENTREPRENEURSHIP
EDUCATION

2.15. Inclusion in entrepreneurship teaching of real case studies provided by business/enterprises

This is a common practice at the University

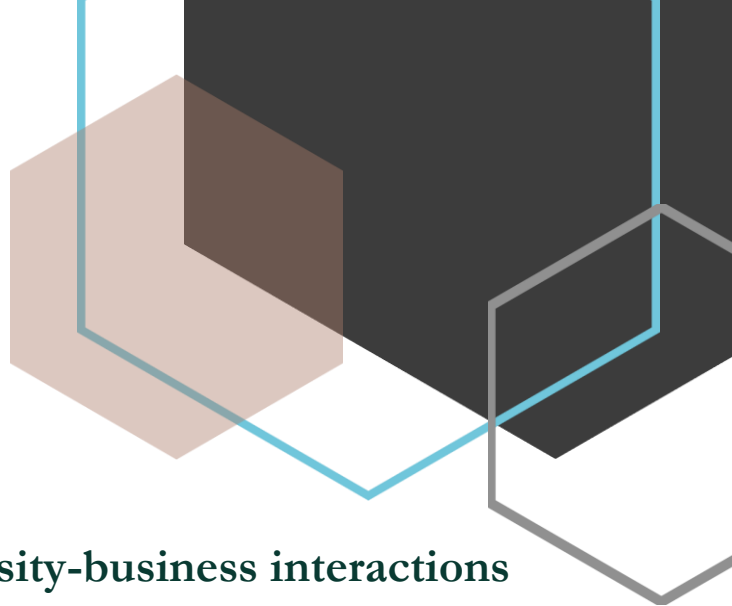
2.16. Use of competency-based approach in assessing the results and impact of studies

There is no explicit competency framework employed. However, assessment is based on indicators.

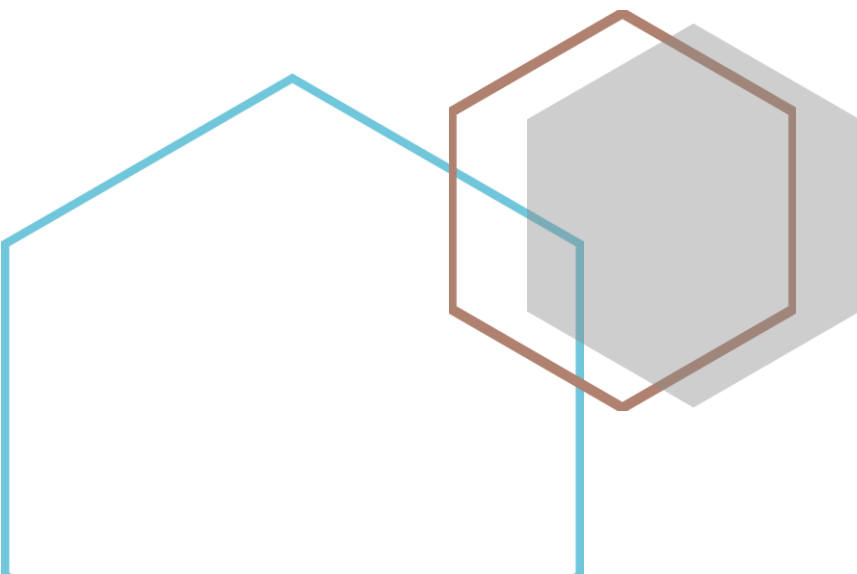
2.17. Monitoring of the development of students' soft skills (leadership, teamwork, communication, etc.)

The University is offering a thirty-hour module Soft Skills program to all its students. Soft skills training is compulsory for both undergraduate and postgraduate students. It is mandatory for every student of the University to acquire 8 credits from this program to successfully complete their undergraduate/postgraduate degree.





Innovation capacity and university-business interactions



3.1. R&D expenditures as a share of total university’s budget

Around 11% of the total university budget is spent on R&D.

3.2. Ratio of total grant funding and funding from external sources to full-time employed academic staff

In view of the purposes of the evaluation, total grant funding (in USD) is calculated as the sum of funding for sponsored research projects and consultancy projects:

2016-2017 academic year = 1777787+54910

2015-2016 academic year = 2142177+19401

Ratio of total grant funding to full-time employed academic staff:

2016-2017 academic year = $1832697/263=6968.43$

2015-2016 academic year = $2161578/315=6862.15$

3.3. Relative number of spin-off firms supported by the university per full-time employed academic staff

None so far.

3.4. Proportion of academic staff holding international and national research grants

53.99% of the full-time employed staff hold an international or national research grant.

**3.5. Proportion of academic staff holding industry research grants
10.2% of the full-time employed staff hold an industry grant.**

3.6. Number of weighted publications per full-time employed academic staff (averaged over the last 3 calendar years)

2014, 2015, 2016: 2682 (Scopus + Web of Science)

Coefficient: $2682/263=10.2$

3.7. Number of citations in Scopus and Google Scholar database per full-time employed academic staff (averaged over the last 3 academic years)

Sum of the times cited: 11625 (coefficient: $11625/263 = 44.2$)

Average Citations per item: 5.78

H-index: 106

Top 25% Highly Cited Papers (2014, 2015,2016)

Web of Science: 357

Scopus: 328

3.8. Relative number of intangibles in the form of patents, licenses, copyrights, trademarks, policy recommendations, etc. per full-time employed academic staff

For the period 2014-2016: $3 \text{ (patents granted)} = 3/263 = 0.01$

A list of all patents (regardless of period) granted to staff of the University of Madras:

Centre for Advanced Study (CAS) in Botany	"A Process for Extracting a novel flavonoid from manilkarazapota - process patent"
Inorganic Chemistry	Novel Piperazinium Polyelectrolytes for Industrial Wastewater Treatment
	Water soluble Polyelectrolytes Based on Poly (5-Ethyl 2-Vinyl Pyridinium) Compounds
CAS in Botany	A process for extraction of bioactive compounds exhibiting anticancer property form lentinustuberregium
Inorganic Chemistry	Controlled MTB delivery by multiblock copolymer nanoparticle
Inorganic Chemistry	A Process for Making Nano-Zirconia Coated Mild Steel for Industrial Applications
	"A new siddha drug formulation based on copper for chronic wound healing"
	Nanotrication conversion coating for copper
Inorganic Chemistry	"pH Triggered Drug Delivery by Zno, Mgo@ Graphene/PolycaprolactoneNanoconjugates"
	"Synthesis of HexafluoroZincornic Acid Powder and its Nano Conversion Coating for Ferrous and Non-Ferrous metal Components"
Zoology	"A Novel Anticancer property Exhibiting Compound, Rinoxia B"
CAS in Botany	Production of Secondary metabolites from acid tolerant acrinomycetes
CAS in Botany	Herbal composition and process for detoxifying herbal extract for snake bite

3.9. Inclusion of support for innovation and regional development in the mission or core strategy of the university

There is no unified document that would state out in detail the mission, vision or long-term strategy of the whole university. However, considering the activities supported at the institution,

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innovation and regional development are apparently one of the priorities. It should be noted that these are also priorities promoted in higher education by the Government of India.

3.10. Existence of an institutional strategy on innovation, innovation support or knowledge transfer to the external environment

There is no explicit and comprehensive strategy on innovation at central level at the University. However, upon request for clarification, the University has provided more information, clarifying that through research projects and patents, faculty members are encouraged to undertake consultancy or provide technical services to industry and other organisations. In addition, the outcomes of research projects are transferred to society through dissemination and publications.

The University management engages in both long term and short term planning to ensure progress in community and industry engagement. There is a Planning and Development Board, which charts overall strategy and runs the overall planning of the University. The board is chaired by the Vice-Chancellor but also has external experts, including experts from industry and the research community.

The University has initiated a Lab to Land programme aimed at transferring innovations from the laboratories of the University of Madras to the grassroots level.

The internal quality assurance system includes several relevant Quality Sustenance and Quality Enhancement Indicators:

- Transfer of in-house innovations to the grassroots
- Procurement of major state of the art lab equipment and instrumentation facilities
- Research and development of patentable products, process and technology transfer
- Publication in high impact factor journals
- Academic and research excellence highlighted through research projects funded by premier national and international agencies
- Enhancement of university, industry and community interaction through consultancy projects.

3.11. Implementation of research and research training planning and policy

The University of Madras has a Board of Research Studies which has experts from different disciplines and it formulates policies, guidelines and ethics policies related to research. A Senior Faculty member is appointed as Dean-Research and is responsible for guiding the Boards of Studies and the Board of Research Studies.

Research Integrity and Ethics policies, guidance and procedures are usually formulated by the Board of Research Studies and should be followed by faculty members and researchers. These guidelines are included in the Prospectus and Students Hand book.

With regard to regulations on the dissemination of research results, all research outcomes and findings should be prepared as a research article and published in reputed indexed journals. Individual researchers are encouraged to also disseminate their research findings at national and international conferences, symposia and seminars. The University provides partial financial assistance to postgraduate students and research scholars, whose papers have been accepted for presentation at international conferences outside the country. Further, when a researcher has made a new research finding in his/her respective research area, s/he is encouraged to publish information about it in daily newspapers and the media for wider dissemination in English and local vernacular languages.. All PhD students are mandated to publish two research articles in their area of research during their PhD studies. They are also encouraged to obtain permission from the University and publish their PhD dissertation as a book.

3.12. Provision of financial resources in the form of seed funding

The science faculties at the university maintain a Start-up Research Fund for new faculty members (faculty that joined the university no earlier than a year before the application). Grants are disbursed on a competitive basis.

There is also a Technology Business Incubator at University of Madras (see below).

3.13. Existence of a clear IPR policy followed by the university in its relations with economic agents

The University reports that there is a clear IPR policy that is being followed.

3.14. Existence of faculty attestation rules that envisage rewarding of applied research for industry/local development

Faculty attestation rules are such that faculty members engaged in industry research or research contributing to local development can receive recognition.

3.15. Existence of rules about modernization of curricula in view of new challenges, national priorities and business needs

Curriculum design and development in University Departments is the responsibility of the School Committee, while in affiliated non-autonomous colleges it is the responsibility of the Board of Studies (BoS).

The process of design and development of the curriculum always involves review and revision, in addition to ratification. Curriculum



revision and introduction of new courses are undertaken based on feedback collected from students, faculty, alumni and employers. Student representatives and industry experts are included as members of Boards of Studies and the School Committees. The University uses both formal and informal feedback methods to obtain feedback about the courses and delivery system. The Internal Quality Assurance Cell (IQAC) of the University, established in 2005, has developed an instrument to get a detailed feedback from students about courses, course content, relevance and delivery by the faculty. Informal feedback is obtained from the participants in seminars/conferences, campus placement companies, alumni, employers, community, academic peers, industry and parents.

The University's quality assurance system includes the following Quality Sustenance and Quality Enhancement Indicators pertaining to curriculum revision:

- Academic innovation through the use of international formats adapted to local needs
- Introduction of postgraduate programmes in cutting edge areas
- Balanced curriculum revision of undergraduate and postgraduate courses interwoven with employability and entrepreneurship skills and social orientation component.

The University of Madras has been a pioneer in initiating courses in emerging and cutting edge fields such as Nano-Science & Nanotechnology, Bio-informatics, Bio-medical Sciences, Neuro Sciences, Molecular Biology, Corporate Sociology, IPR, Cyber Crimes & Information Security, Actuarial Sciences, Sustainable Development. However, all other postgraduate programmes, too, take into account the future needs of Indian society. The Choice Based Credit System, which has been used at the university since the 1996/97 academic year, facilitates continuous review and upgrading of the curriculum to reflect emerging needs and trends.

SUPPORT
STRUCTURES AND
LINKAGES
FACILITATING
INNOVATION AND
UNIVERSITY-
BUSINESS
INTERACTIONS

3.16. Existence of university structures facilitating links with industry and local community or structures in which the university is collaborating with external economic actors or the local community

- university research laboratories (owned or shared with other entities)

Central Instrumentation and Service Laboratory: Established in 1976 and later upgraded in 1980 as the University Science Instrumentation Centre (USIC), it provides instrumentation and engineering service facilities for scientific research as well as for promoting R&D in Instrumentation Technology.

Laboratory at the Department of Zoology: The Laboratory supports research in areas such as biology of coastal marine organisms, planktonic studies, physiology and pathology of marine organisms,

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ecology of coastal environment, insect pest management, productivity of sea through planktonic studies including the one and the only "planktonic calendar" for the Madras coast. The Laboratory has been home to 3 National Marine Research Institutes: 1) Central Marine Fisheries Research Institute, 2) National Institute of Oceanography 3) Wood Research and Preservation Centre presently located at Cochin, Goa and Bangalore and funded by Department of Agriculture and Fisheries, Department of Environment and Forestry and Department of Ocean Development, Government of India.

Botany Laboratory: Established in 1930; new sophisticated instruments were purchased with UGC assistance under the COSIST Program.

- technological parks

There are no technology parks in which the University is involved.

- technology transfer offices

The University Industry Community Interaction Centre is serving the purposes of a technology transfer office. The structure has been described in the previous section.

- Incubators

Technology Business Incubator at University of Madras: This is a joint initiative of University of Madras and the Department of Science and Technology at the Government of India. It was established in 2006. The focus of its work is the facilitation of sustainable growth of knowledge-based businesses in the areas of herbal and biotech products for the health industry.

The objectives of the Incubator are:

- to foster entrepreneurship amongst students and faculty members
- to encourage new ideas and provide support to translate ideas into enterprises
- to support the emergence of entrepreneurial culture that is less averse to entrepreneurial risk
- to promote linkages between university, research institutes and industry
- to commercialise research outputs
- to facilitate start-up companies/enterprises to develop products/ processes
- to promote clusters of technology based small enterprises
- to create technological awareness in existing SMEs

The services of the incubator are targeted at: freshers from the university, freelance entrepreneurs, SMEs or even big industries

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needing support to diversify their activity.

The Centre for the Techno-entrepreneur Promotion Programme (TePP), too, has some functions of an incubator (description was provided in the previous section)

- Accelerators

There are no accelerators maintained by the University or accelerators in which the University is involved.

- Applied research centres

The University Industry Community Interaction Centre is serving the functions of an applied research centre.

- Research and development units

Some science Departments have Research and Development programs. The latter are usually financed by the UGC.

3.17. Legal possibility for researchers to become engaged in research supported by industry

It is possible for researchers undertake consultancy projects supported by industry.

3.18. Proportion of students in bachelor's/master's/post-graduate programs involved in research projects (averaged over the last 3 academic years)

About 39.01% of the students at the University are reported to be involved in some way in research projects.

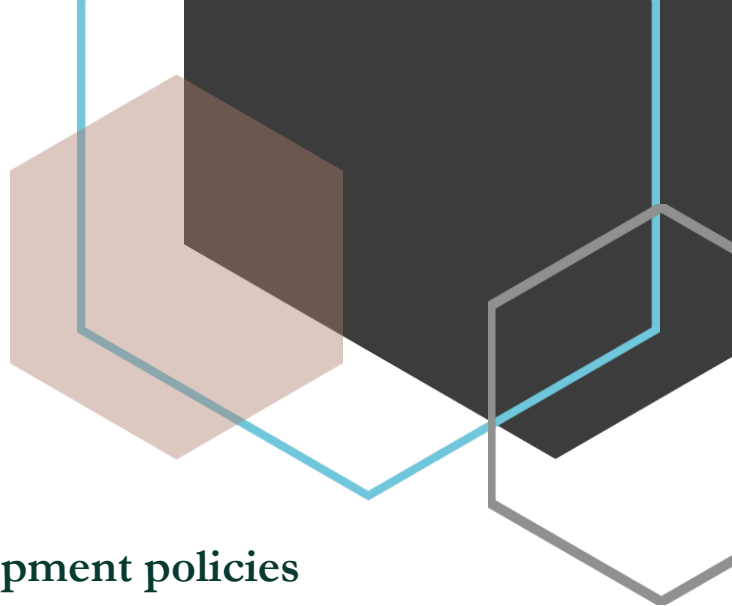
3.19. PhD degree completions per full-time employed academic staff (averaged over the last 3 academic years)

2016/17 academic year: 253 PhD completions, ratio= $253/263=0.96$

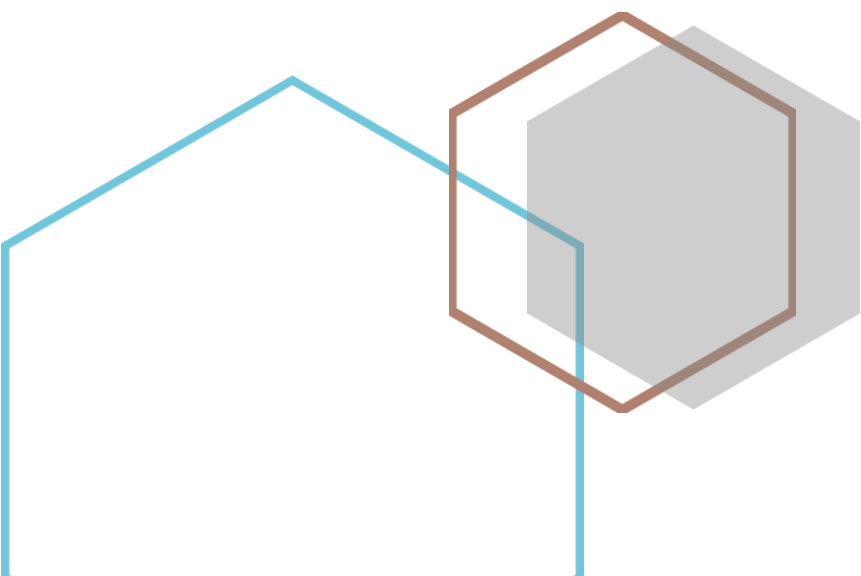
201/16 academic year: 272 PhD completions, ratio= $272/315=0.86$

3.20. Proportion of PhD completions within planned schedule (averaged over the last 3 academic years)

70% of the PhD students defended their PhD thesis within planned schedule.



Student talent development policies



**CAPACITY TO
ATTRACT AND RETAIN
TALENT**
4.1. Existence of a marketing strategy for attracting talented students

There is no marketing strategy for attracting students. As a State University, the University of Madras is not allowed to engage in marketing.

For international students, there is the International Centre of Madras University (ICOM), established in 2003 to promote the free flow of students from other countries to India, as well as allow Indian students access to opportunities to study abroad. However, the Centre does not have a marketing strategy for attracting foreign students. The University has nevertheless initiated several steps to attract foreign students. Foreign applicants are exempted from appearing for entrance examinations and are admitted under 15% supernumerary seats of the permitted intake in all departments.

4.2. Share of foreign students in total number of students enrolled

For academic year 2016-2017: $45/2462=2.23\%$

As of April 2018: 2.6%

4.3. Share of students that started work in their field of study within 6 months after graduation/or board exam

No such data is being collected.

4.4. Student-teaching staff ratio

For academic year 2016/17: 9.3:1

As of April 2018: 12:1

4.5. Existing students' enrolment and services office

There is an Admission Wing serving the Colleges and Departments. It is related to the Registrar's office. There is a separate Section of PhD admission, as well as a Section on the Choice Based Credit System.

4.6. Existence of a quality management system for academic excellence

There is an active Internal Quality Assurance Cell. It was established in 2005 and has developed instruments for receiving feedback and assessing the quality of the education delivered at the University. Quality Assurance Reports are being regularly developed.

4.7. Existence of options for part-time/distance /flexible learning at the university

There are options. For example, out of the 1001 students pursuing PhD degree during the 2016/17 academic year, 229 studied part-time.

Distance learning is very well developed at the University. There is a special Institute for Distance Education (IDE) operating since 1981. IDE offers 27 Undergraduate Courses; 21 Postgraduate Courses, of

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**STUDENT WELFARE
SUPPORT**

which 9 Postgraduate Science Courses; 5 Professional Courses; 16 Diploma Courses; 12 Certificate Courses. Until 2017, it had a vast network of admission, study and examination centres within the Tamil Nadu region and in other states, as well as overseas. After 2017, the operation of all centres outside Tamil Nadu and within the Chennai Metropolitan Area is phased out due to new restrictive regulations. The Institute is providing study materials in self-learning format to distance students. IDE has had about 160 000 students on its rolls.

4.8. Existence of a strategy for residential environment improvement, including dormitories for students, active student welfare office, sport facilities

Hostel Facility is available for both male and female students. There are separate student sports facilities.

The role of a student welfare office is played by the University Students Advisory Bureau (USAB). The USAB offers counselling and career guidance for students. It also provides placement services to graduates and post graduates of the University. The Bureau is engaged in a number of different activities, such as organization of exhibitions on careers and vocations, Science Talent Promotion Scheme for first year postgraduate students studying at the University Departments, computer training and acting classes for students, job oriented short-term courses for unemployed graduates.

4.9. Existence of health service at the university premises

A Health Centre has been established to cater to the basic health of students and staff.

4.10. Share of approved applications for university dormitories or for provision of support for student accommodation

Around 80% of the applications for university dormitories are approved.

4.11. Existence of support service for reducing debt load of students

Students benefit from a number of scholarships, some of which are specifically targeted at disadvantaged students (see below). National Merit scholarships are also awarded. More than 100 Endowment scholarships/fellowships are available under different categories (PhD students - 9, M.Phil. students - 6, postgraduate students - 31, undergraduate students - 18).

A Free Education Scheme exists under which the University covers the tuition and other fees (except examination fees) for one poor student based on merit and economic status in each postgraduate programme.

In addition, the University has introduced a new “Earn While You Learn” scheme that benefits postgraduate students and research



scholars. Under this scheme, deserving students work as part-time laboratory assistants, library assistants, technical assistants, and tutorial assistants (for M.Phil. & PhD Scholars) at the University and receive remuneration.

Several medals and prizes for outstanding theses or excellent performance in examinations and essay competitions are awarded under various Endowments instituted in the University.

The University also provides Research Fellowships (URF University Research Fellowship / Tamil Nadu Fellowship for PhD students). Project Fellowships are available under the UGC Schemes “Centre with Potential for Excellence in Particular Area” (CPEPA) and “University with Potential for Excellence”. Fellowships are available also through funding in the frame of government/ non-government research projects.

Scholarship and Fee Concession are provided for SAARC and Sri Lankan Students.

4.12. Share of students who receive financial support (scholarships, student loans, etc.)

60.55% of the students at the University receive financial support of some kind.

4.13. Existence of options for legal advice for students

Students can receive such support.

4.14. Share of mature students in total number of students enrolled

The share of mature student entrants is 27.13%.

4.15. Share of students with disabilities in total number of students enrolled

The share of students with disabilities enrolled at the University is 4.6%.

4.16. Existence of specialized support for disadvantaged groups of students (students with disabilities, mature students, minority groups, etc.)

A Standing Committee for the welfare of Scheduled Castes and Scheduled Tribes (SC/ST) has been operational at the University, chaired by the Vice-Chancellor. This Committee is tasked with ensuring the welfare of SC/ST students. A Special Cell for the welfare of these students has been set up. SC/ST students can receive different types of support, including: tuition fee concession; overseas scholarship; Indian Oil scholarships (for those pursuing full time Engineering and Medical Postgraduate courses and Postgraduate Degree course in Business Administration / Management). There is a reservation policy of the State Government in admission and hostel accommodation for SC/ST

CAPACITY TO
ATTRACT AND RETAIN
STUDENT TALENT
FROM
DISADVANTAGED
GROUPS AND THE
GROUP OF NON-
TRADITIONAL
LEARNERS



students. The University of Madras follows this policy.

For self-supportive courses offered at the University Departments, SC/ST students are entitled to a 50% fee concession on Tuition fee, Laboratory fee and Special fee only.

Full fee exemption (including fees for examination and special fees) are provided for Physically Challenged students in postgraduate and M.Phil. programmes at the University Departments. The University implements the reservation policy of the Government of Tamil Nadu, which attempts to enhance the access for such students.

Support is provided to disadvantaged students in the learning process, too. The University has offered specialized soft skills training courses for Physically Challenged students. For the differently abled students, a Talking Book Library section has also been created. Remedial coaching is available for undergraduate and postgraduate students belonging to the SC/ST categories, and for students from minority communities. A coaching scheme has been devised for university candidates belonging to these groups, too.

There is also an Equal Opportunity Cell that helps persons belonging to SC/ST, Other Backward Class categories and other minorities to enhance their employability and successⁱⁱⁱ.

4.17. Existence of built environment with universal design for students with disabilities

Lifts/ramps are available in all buildings. Walking aids, including wheelchairs and transportation from one building to another are available in all the buildings. Toilets equipped for people with disabilities are also available in all buildings.

4.18. Existence of adapted teaching process for disadvantaged students

There is flexibility for adapting the teaching process.

4.19. Existence of adapted assessments and examination process for disadvantaged students

There is flexibility for adapting the examination process.

4.20. Share of students engaged in practicing entrepreneurship skills (e.g. teamwork, leadership, project management, business plan development and competitions, idea competitions for solving community and social issues, elevator pitch contests, public speaking, network creation)

23.3% of the students at the University are reported to be engaged in some way in practicing entrepreneurship skills.

4.21. Share of students who participated in internships in professional settings

90-95% of the students at the University participate in internships in

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POLICIES/STRUCTURES FOR DEVELOPING STUDENT TALENT

professional settings. Internships are mandatory in all Departments.

4.22. Share of students included in coaching/mentoring programmes

6.1% of the students at the University are reported to be engaged in some way in coaching/mentoring programmes related to entrepreneurship

4.23. Share of students who participated in study tours (domestic and/or international)

90-95% of the students at the University participate in study tours. Exposure visits are mandatory in all Departments.

4.24. Public financial support is provided to (partially) cover the costs of practical training

Financial support is reported to be provided although no specific information about the extent and effectiveness of this support is given.

4.25. Existence of policy/structure in support of student talent development (e.g., initiatives for business/product development, local and/or global community partnership, arts-based ventures, etc.)

Internship and four soft-skill courses are mandatory for undergraduate and postgraduate programmes. In addition, industry visit is included as part of exposure (study) visits. Students also participate in global community partnership programmes through travel grant supported by International Centre of University of Madras (ICOM).

4.26. Existing dedicated place to showcase and collect innovative ideas from students, staff, faculty, community members

As yet there is no such space available or plans for its creation.

4.27. Student participation in official decision-making bodies at the university (e.g. Academic Council, Department Council, Student Council, etc.)

Student representatives participate in official decision-making bodies - Board of Studies (BOS).

4.28. Existence of clear and transparent procedures for student involvement in decision-making bodies at the university

Student representatives are co-opted by the Chairperson of each BoS.

4.29. Engagement of students as expert members of quality assurance bodies at the university

EMPOWERING STUDENTS AS STAKEHOLDERS IN UNIVERSITY GOVERNANCE



Yes, they are.

4.30. Are students asked to provide information (e.g. through surveys) on the following core aspects of student experience:

- design of the curriculum
- quality of the teaching
- student learning
- assessment methods
- student resources available to support them?

Student feedback is sought on all of the above aspects

4.31. Are students asked to provide information (e.g. through surveys) on additional aspects of student experience:

- student support services
- university social life?

Student feedback is sought on all of the above aspects

4.32. Is information about quality assurance (procedures, schedules, results) published and available to students?

Such information is provided.

4.33. Motivation for student involvement with quality assurance:

- Monetary compensation
- Credits
- Other types of motivation

Motivation is provided through monetary compensation and credits.

4.34. Is training or support materials/database/web portal etc. about quality assurance provided to students

Students involved in quality assurance receive such training.

4.35. Organization of events (briefings, discussions, quality forums) to inform students about the practice of quality assurance

As of now there is no such practice.

4.36. Does the University monitor the career paths of former students?

The University monitors the career paths of former students.

4.37. Does the University carry out or use student and graduate surveys, where students and/or graduates provide details on their transition to the labour market?

The University uses such tools.

4.38. Is career guidance available throughout the whole student lifecycle?

Faculty advisers, University Students Advisory Bureau (USAB) and International Centre of Madras University (ICOM) are available to provide career guidance for students at different stages of their studies. However, many individual students who have graduated maintain cordial relationship and regular contact with their teacher and get all kinds of support/guidance for their career development, even after they graduated from the University.

4.39. Is career guidance available to all students?

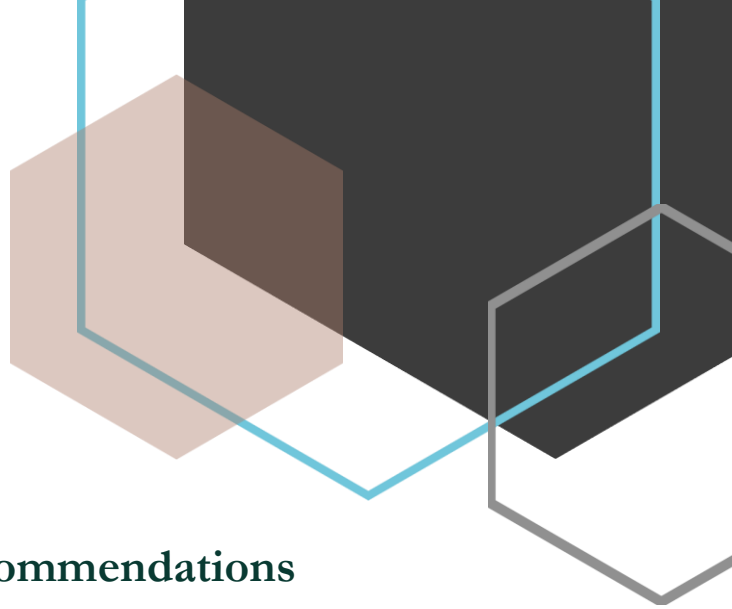
All students at the University have access to career guidance.

4.40. Provision of career guidance specifically targeted at disadvantaged students

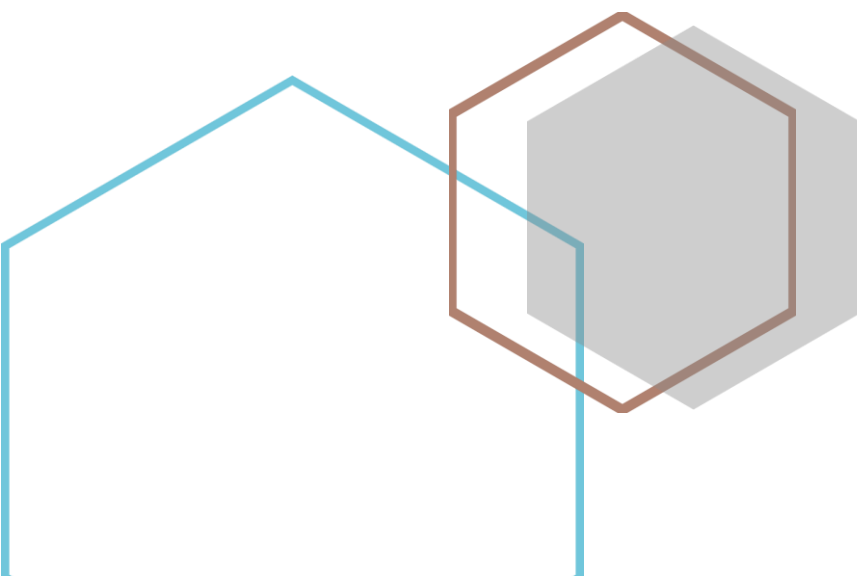
Special coaching classes/training programmes for disadvantaged students are organized regularly through the University Students Advisory Bureau (USAB), which has tie-up with various IT industries/companies/industries.

4.41. Provision of career guidance services for graduates/alumni

Currently, it is not provided, but there is interest to do this.



Conclusions and recommendations



**OVERALL
ASSESSMENT**

The strongest advantage of the University of Madras appears to be in teaching, coupled with substantial achievements in research. While innovation, technology transfer and direct links to business development are not developed to the same degree, notable efforts are made in these areas. Most of these efforts have started a rather long time ago, which demonstrates strategic commitment.

Below we present the observations and recommendations for improvements that can be made on the basis of this report.

STRENGTHS

- The University is performing well in the area of engaging employers in curriculum development, teaching and even institutional governance. This trend should be continued and more efforts should be made to clarify and point out the practical and mutually beneficial aspects of the collaboration.
- Considering the variety of teaching subjects covered (some of which are not directly related to Entrepreneurship), the University appears to have a strong human resource capacity for entrepreneurship education. It is commendable that Entrepreneurship training for faculty is provided in-house. The efforts should be continued and, if possible, intensified.
- Despite restrictions on faculty ability to hold official work positions in industry (which limits mobility across the business and education sectors), there is still possibility and relative freedom for faculty and researchers to engage in research affecting the economy and society. Such engagement should be encouraged further.
- The University has structures in place to facilitate links with society and business. These should be strengthened.
- The University is performing well in terms of promoting internships, as well as the acquisition of transferrable skills. The decision to make internships and soft skills training compulsory in all programs is an important step in the direction of improving graduates' employability. The focus should now be on improving quality of internships and the effectiveness of soft skills training.
- The University is performing well in terms of grant funding, as well as publication activity and research impact. There is substantial number of staff members who hold industry grants.
- The University has a clear and detailed Quality Assurance policy, which strongly supports its ability to both achieve academic and research excellence and monitor and develop stronger commitment to graduates' employability, student welfare and knowledge exchange with society and the economy.
- Modernization of curricula in view of new challenges, national priorities and business needs is quite satisfactory. The University stands out for its initiative to develop courses in emerging areas with high research, scientific and industry potential. The



introduction of the Choice Based Credit System has been successful.

- The reported rate of involvement of students in research projects is quite satisfactory. The rate of production of PhD degrees is also substantial, which attests to a notable research potential.
- The University avails of a satisfactory number of research laboratories and research centres, which puts it in a very advantageous position to not just excel in research but also engage more actively in knowledge transfer to the economy and society.
- The structures supporting students (admission, welfare, health services, legal services, accommodation, etc.) are quite well developed. The rate of approval of applications for university dormitories is quite impressive.
- A variety of scholarships and fellowships are available to support students financially. It should be noted that the most substantial support is primarily provided to the economically most disadvantaged students and PhD students, which is a reasonable policy.
- There is flexibility in terms of the mode of teaching, with distance education being well developed, which enables students in a variety of life situations to engage in learning.
- According to the provided information, disadvantaged students receive substantial support at the University– both financial and in terms of assistance during their studies.
- The University is noteworthy for having provided built environment with universal design for students with disabilities in all of its buildings.
- There is satisfactory student representation in governance and in quality assurance.

RECOMMENDATIONS
FOR IMPROVEMENT

-
- Formulate, regularly update and implement a strategy for institutional development: The University would benefit from formulating and implementing a coherent explicit strategy for its overall development.
 - Formulate, regularly update and implement short-term to medium-term strategy for entrepreneurship education, strategy for innovation and strategy for knowledge transfer to the external environment, setting clear goals and allocating resources: Developing such strategies at institutional level would streamline the university's efforts in these areas, strengthen the commitment of all staff members and ensure that available resources are used optimally to achieve maximum results. Considering that the Government of India is prioritizing



entrepreneurship education, innovation and developing links with business and society, and that substantial public financial resources are likely to be invested in these areas, such strategies could contribute to improving the overall performance and recognition of the University.

- Design and deliver more foundational courses in Entrepreneurship tailored to the needs of particular Departments: This would improve graduates' employability. The more Departments introduce Entrepreneurship or innovation training, the strongest the impact would be. Introducing strong foundational Entrepreneurship training would be especially beneficial in all science Departments, as well as Departments relevant to Arts, Entertainment and the Creative Industries.
- Review and strengthen the outreach and communication strategies of support structures such as incubators and technology transfer offices: It appears that more – and more substantial– information can be collected and provided in the public domain on the activities of the university structures linking the faculty and students with society and business. This would increase the accountability of these structures. It is recommended also that these structures review their communication strategies in order to ensure that they reach out effectively to a variety of interested actors in the local and regional economies. No thorough assessment of these communication strategies has been carried out in this report, but it is noticeable that the support structures do not maintain a strong web or social media presence.
- Open up research laboratories to industry: To the extent permitted by law, research laboratories should be open to entrepreneurs and investors from outside the University, especially in the frame of collaborative R&D projects. This would facilitate the development of long-lasting partnerships between university and business.
- Develop and introduce competency-based frameworks for assessing students' knowledge and skills: Despite the commendable focus on training in soft skills, it is recommended that the university explore the possibility of developing and introducing a competency-based framework for assessing students' skills, including both soft and professional skills.
- Diversify funding: The University gets most of its funds from research projects and Block grants from State Government. In addition to this type of funding, efforts to increase the number of consultancy projects, applied research sponsored by industry and other funds from industry should be stepped up, especially in view of improving the financial situation and allowing the University to take advantage of its recently increased autonomy from the University Grants Commission.
- Formulate and implement a strategy aimed at retaining student

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talent: As a State University, the University of Madras is not allowed to engage in marketing. This very much limits the range of actions that can be taken with regard to attracting talent. However, the University would nevertheless benefit from devising and implementing a strategy aimed at retaining talented students. This applies to retaining both Indian and foreign students.

- Step up internationalization efforts: The University does not appear sufficiently internationalized, considering the substantial educational and research potential that it exhibits. More foreign students should be attracted and the possibilities for international mobility of students should be improved.
- Step up relations with alumni: The University could benefit from more extensive engagement with alumni and graduates, in particular with regard to monitoring the career path of graduates and providing career guidance services to alumni.

AUTONOMY & AUTONOMY	
CATEGORY I INSTITUTIONS	CATEGORY II INSTITUTIONS
Automatically eligible for central assistance without UGC inspection	Same as Category 1
Can open off-campus centres without UGC nod, but must arrange funds	Need UGC nod, but inspection not needed. Subject to conditions
Can open research parks, incubation centres, society linkage centres	Need UGC approval
Can hire without UGC nod foreign faculty, with conditions	Same as Category 1
Can admit foreign students on merit, with conditions	Same as Category 1
Can collaborate with world's top 500 universities, without UGC nod	Will continue to need UGC permission
Can offer distance learning without UGC approval, in line with rules	Will have to seek UGC approval

Source: “Simply Put: What ‘autonomy’ will bring for UGC’s chosen ones”, The Indian Express, May 09, 2018 (<http://indianexpress.com/article/explained/what-autonomy-will-bring-for-ugcs-chosen-ones-prakash-javadekar-higher-education-5107849/>)

ⁱⁱ University Grants Commission (Categorisation of Universities for Grant of Graded Autonomy) Regulations – 2017 Notification, May 2017 (https://www.ugc.ac.in/pdfnews/9837591_Public-Notice-regarding-draft-Regulations-and-Guidelines.pdf)



ⁱⁱⁱ A collective term used by the Government of India to designate groups that are socially or educationally or economically disadvantaged for reasons other than belonging to a caste.

