



No. L4/13278/21/DTE

Dated: 12.04.2021

**CIRCULAR**

Sub:- Higher Education - Directorate of Technical Education - Plan Budget 2021-22 - Outlay, Earmarking and Write-up - reg.

Ref :- State Plan Budget 2021-22

In connection with the **State Plan Budget 2021-22**, the budget documents including the plan scheme write-up & plan budget outlay with component-wise and institution-wise earmarking of funds is hereby enclosed for your information and necessary action.

**BUDGET OUTLAY & EARMARKING OF FUNDS**

Expenditure shall be limited to the outlay provided for each scheme in the budget and according to the funds earmarked for institutions under various scheme components as per the annexures attached (*The plan outlay and earmarking of plan funds is attached as Annexures I to IV*)

**BUDGET WRITE-UP**

Plan budget scheme activities shall be implemented only in accordance with the scheme objectives and for scheme activities as mentioned in the budget write-up (*Write-up in English is attached*)

**PROPOSALS FOR RESEARCH INITIATIVES, PPP MODE SCHEMES, TBI & PAT CENTRES etc**

Manpower Requirements for implementing plan schemes such as Research Initiatives, PPP mode schemes, TBI & PAT centres etc requires Government Sanction and shall be submitted as a separate proposal.

Also in case of the aforesaid schemes, Activity Report of the centre for the year 2020-21 shall be furnished along with the proposal for the year 2021-22. (*Format for Activity Report is attached Annexure-V*)

**SANCTION FOR PLAN SCHEMES**

Heads of institutions shall issue sanction for proposals under the plan scheme 'Development of Institution' only as per the delegation of powers entrusted in accordance with the government rules in force. Proposals shall be forwarded to the Department for necessary approval in case of all other plan schemes in the budget.

Dr. Byjubai T.P  
Director of Technical Education (in-charge)

To

Heads of all institutions/offices (Through the website [www.dtekerala.gov.in](http://www.dtekerala.gov.in))

Forwarded / By Order

Senior Superintendent

**DIRECTORATE OF TECHNICAL EDUCATION - BUDGET PROVISION - 2021-2022 (PLAN)**  
**STATE & CENTRAL SCHEMES (REVENUE)**

(Rs.in Lakh)

SL. No.	Plan 2021-2022 Head of account	Salaries	04 Travel Expense		"09"	"12"	"17"	"19"	"24"	"34 OC[3]"	TOTAL
			Tour TA	LTA	Grant	SS	MW	M&E	M&S	OI	
1	2203-00-001-93 Strengthening of the Department									100	100
2	2203-00-001-92 Enhancement of Academic Ambience									1000	1000
3	2203-00-003-89 T-L Process Enhancement & Skill Gap Reduction	715								585	1300
4	2203-00-004-93 Research Initiatives									350	350
5	2203-00-103-99 Development of All Govt. Technical High Schools									600	600
6	2203-00-105-79 Development of All Govt. Polytechnic Colleges						1035	161	276	828	2300
7	2203-00-105-76 Centrally Sponsored Schemes for Polytechnic Colleges (50% CSS) (CS+SS)									400	400
8	2203-00-107-92 Merit-cum-means based sch.for minorities for professional & technical courses (100%CSS)					20					20
9	2203-00-112-56 Schemes coming under PPP Mode									60	60
10	2203-00-112-41 Development of All Govt. Engineering Colleges	31.45					248.15	616.29	121.16	1312.95	2330
11	2205-00-101-94 College of Fine Arts						56.7	56.7	33.6	63	210
	<b>Total</b>	<b>746.45</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>1339.85</b>	<b>833.99</b>	<b>430.76</b>	<b>5298.95</b>	<b>8670</b>

**Annexure - II****DIRECTORATE OF TECHNICAL EDUCATION - BUDGET PROVISION - 2021-2022 (PLAN)****STATE & CENTRAL SCHEMES - CAPITAL (PWD)**

<b>SL. No.</b>	<b>Head of Account</b>	<b>Name of Scheme</b>	<b>Amount (Rs. in Lakhs)</b>
1	4202-02-800-83	<b>Strengthening of the Department</b>	<b>100</b>
2	4202-02-105-81	<b>Development of All Government Engineering Colleges</b>	<b>1200</b>
3	4202-02-104-99	<b>Development of All Government Polytechnic Colleges</b>	<b>1730</b>
4	4202-02-103-99	<b>Development of All Government Technical High Schools</b>	<b>600</b>
5	4202-04-101-99	<b>College of Fine Arts</b>	<b>100</b>
<b>Total</b>			<b>3730</b>
<b>CSS</b>			
6	4202-02-104-93	<b>Construction of Women's Hostel (50% CSS)</b>	<b>4</b>
<b>Total</b>			<b>4</b>

**DEPARTMENT OF TECHNICAL EDUCATION**  
**PLAN BUDGET - 2021-22 (PLAN)**  
**SCHEME COMPONENTS - FUNDS EARMARKED**

**A. SCHEMES (STATE PLAN)**

Sl No	Name of Scheme	Head of Account	BUDGET 2021-22		
			Rev. 2203/2205	Capital PWD 4202	Total
1	2	3	4	5	6
<b>R1</b>	<b>Strengthening of the Department</b>	<b>2203-00-001-93</b>	<b>100</b>		
	Directorate of Technical Education, RDTE Offices & Examination Wing		40		
	Staff Development of DTE		10		
	State Board of Technical Education		10		
	Development of Human Resources (SITTTR)		40		
<b>C1</b>	<b>Strengthening of the Department</b>	<b>4202-02-800-83</b>		<b>100</b>	
	Directorate of Technical Education, RDTE Offices & Examination Wing		100		
	Development of Human Resources (SITTTR)				
<b>R2</b>	<b>Teaching Learning Enhancement &amp; Skill gap reduction</b>	<b>2203-00-003-89</b>			<b>1300</b>
	Faculty Development in Engineering College		830		
	Industry Institute Interaction Cell (IIC)		100		
	Academic Staff College & State QA		50		
	Placement and Training		100		
	Faculty and Staff Development Training				
	Additional Skill Development Programme (ASDP)		20		
	Scholar Support Programme		20		
	Students affairs & Counselling Centre		30		
	Punarjjani		50		
	Technology Business Incubation Centres in Polytechnics and Engineering Colleges		100		
<b>R3</b>	<b>Development of All Engg. Colleges</b>	<b>2203-00-112-41</b>			<b>2330</b>
	Development of Engineering Colleges		<b>1650</b>		
	Education Recourse Centres in all Engineering Colleges		150		
	Research Scholarship in all Engineering Colleges		100		
	Quality Improvement Centres in Engineering Colleges		300		
	Accreditation of Engineering Colleges		100		
	Technical Education Quality Improvement Programme (TEQIP ph. II)		30		

<b>C2</b>	<b>Development of All Engg. Colleges</b>	<b>4202-02-105-81</b>		<b>1200</b>	
<b>R4</b>	<b>Development of All Polytechnic Colleges</b>	<b>2203-00-105-79</b>	<b>2300</b>		<b>2300</b>
	Development of all Government Polytechnic Colleges		2100		
	Establishment of Production And Training (PAT) Centre in Polytechnic		20		
	Accreditation of Govt. Polytechnic Colleges		170		
	Material Testing and Certification centre in Polytechnic Colleges		10		
<b>C3</b>	<b>Development of All Polytechnic Colleges</b>	<b>4202-02-104-99</b>		<b>1730</b>	
<b>R5</b>	<b>Technical High Schools</b>	<b>2203-00-103-99</b>	<b>600</b>		
	Technical High Schools		550		
	National Skill Qualification Frame work in Technical High Schools and Polytechnics (NSQF)		50		
<b>C4</b>	<b>Technical High Schools</b>	<b>4202-02-103-99</b>		<b>600</b>	
<b>R6</b>	<b>College of Fine Arts</b>	<b>2205-00-101-94</b>	<b>210</b>		
<b>C5</b>	<b>College of Fine Arts</b>	<b>4202-04-101-99</b>		<b>100</b>	
<b>R7</b>	<b>Enhancement of Academic Ambience</b>	<b>2203-00-001-92</b>	<b>1000</b>		
	Evolving Libraries as Knowledge Centres (Strengthening the Libraries in Engineering Colleges and Polytechnics)		400		
	Strengthening and Development of Physical Education		100		
	ICT in Engineering Colleges and Polytechnics		430		
	Connectivity for National Mission on Education through Information Communication Technologies NMEICT		70		
<b>R8</b>	<b>Research Initiatives</b>	<b>2203-00-004-93</b>	<b>350</b>		<b>350</b>
	Transportation Engineering and Research Centre		30		
	Product Design & Development Centre at CET		20		
	Re-Usable building system at RIT, Kottayam		20		
	Rural Technology Development Centre		20		

	Student Satellite Launch Programme at CET		25		
	Centre for Bamboo Technology		20		
	Robotics & AI nodal Centre at GEC, Thrissur		25		
	Centre of Excellence in Systems, Energy & Environment at GCE, Kannur		20		
	Centre for high performance computing at CET		20		
	Electrical Vehicle Testing Lab at CET		100		
	Centre for Disaster management at GEC, Thrissur		50		
<b>R9</b>	<b>TReST RESEARCH PARK</b>				
<b>R10</b>	<b>Schemes Coming under PPP mode</b>	<b>2203-00-112-56</b>	<b>60</b>		<b>60</b>
<b>R11</b>	<b>CSS for Polytechnic Colleges (50%CSS)</b>	<b>2203 - 00-105-76 (50% CSS)</b>	<b>200</b>		<b>200</b>
<b>C6</b>	<b>CSS for Polytechnic Colleges (50%CSS)</b>	<b>4202-00-104-93 (50% CSS)</b>		<b>2</b>	<b>2</b>
<b>R12</b>	<b>IIT in Kerala</b>	<b>2203-00-112-62</b>			
	<b>TOTAL (A)</b>		<b>8450</b>	<b>3732</b>	<b>12182</b>

#### B. CENTRALLY SPONSORED SCHEMES - CENTRAL SHARE

Sl No	Name of Scheme	Head of Account	BUDGET 2021-22		
			Rev. 2203	Capital PWD 4202	Total
1	2	3	4	5	6
<b>R13</b>	Merit Cum Means Scholarship (MCMS) (100%CSS)	2203-00-107-92	<b>20</b>		<b>20</b>
<b>R11</b>	CSS for Polytechnic Colleges (50%CSS)	2203 - 00-105-76 (50% CSS)	<b>200</b>		<b>200</b>
<b>C6</b>	CSS for Polytechnic Colleges (50%CSS)	4202-00-104-93 (50% CSS)		<b>2</b>	<b>2</b>
	<b>TOTAL (B)</b>		<b>220</b>	<b>2</b>	<b>222</b>
	<b>TOTAL (A+B)</b>		<b>8670</b>	<b>3734</b>	<b>12404</b>

**DIRECTORATE OF TECHNICAL EDUCATION**  
**BUDGET PROVISION - 2021-2022 (PLAN)**  
**INSTITUTION-WISE - FUNDS EARMARKED**

(Rs.in Lakhs)

SL. No.	Plan 2021-22	"17"	"19"	"24"	"34 OC[3]"	TOTAL
	Head of account	MW	M&E	M&S	OI	
<b>R2</b>	<b>2203-00-003-89 Teaching Learning Enhancement &amp; Skill Gap Reduction (Rs.1300 L)</b>					
	<b>Training Programmes (under Academic Staff College) (Rs. 50L)</b>					
	Engineering Colleges -need based					30
	DTE - Training Officer					20
	<b>ASDP (Rs. 20 L)</b>					
	Any 4 Engineering Colleges (4x5)					20
	<b>TBI (Rs. 100 L)</b>					
	CET					8
	GEC, Thrissur					8
	RIT, Kottayam					5
	GCE, Kannur					5
	GEC, Bartonhill					5
	GEC, Palakkad					5
	GEC, Kozhikode					5
	GEC, Wayanad					5
	GEC, Idukki					5
	GPTC, Kaduthuruthy					4
	GPTC, Kalamassery					4
	WPTC, Thrissur					4
	SRGPTC, Thriprayar					4
	SD Centre, Kalamassery					4
	For 41 Polytechnic colleges (0.7 L each - need based)					29
	<b>SSP (Rs. 20 L)</b>					
	Engineering Colleges (9x1)					9
	Polytechnic Colleges (45x0.2)					9
	Technical High Schools (39) - need based					2
<b>R3</b>	<b>2203-00-112-41 Development of Engineering Colleges (Rs. 2330 L)</b>					
	<b>Development of Engineering Colleges (Rs. 1650 L)</b>					
	College of Engineering, Trivandrum	28	100	20	105	253
	GEC, Thrissur	28	100	17	105	250
	RIT, Kottayam	28	100	17	105	250
	GCE, Kannur	28	100	17	100	245
	GEC, Bartonhill	27	43	10	50	130
	GEC, Idukki	28	44	10	50	132
	GEC, Palakkad	27	43	10	50	130
	GEC, Kozhikode	27	43	10	50	130
	GEC, Wayanad	27	43	10	50	130
	<b>ERC (Rs. 150 L)</b>					
	Engineering Colleges (9x16.5)				150	150

<b>QIP centres (Rs. 300 L)</b>						
CET					80	80
GEC, Thrissur					80	80
RIT, Kottayam					80	80
Other Engineering Colleges (6X10)					60	60
<b>R4</b>	<b>2203-00-105-79 Development of All Polytechnic Colleges (Rs. 2300 L)</b>					
	<b>Development of All Polytechnic Colleges (Rs. 2100 L)</b>	1035	161	276	628	2100
	<b>PAT (Rs. 20 L)</b>					
	WPTC, Kozhikode				3	3
	GPTC, Perumbavoor				7	7
	New PAT centre 1				5	5
	New PAT centre 2				5	5
<b>R6</b>	<b>2205-00-101-94 CFA (Rs. 210 L)</b>					
	CFA, Thiruvananthapuram	18.9	18.9	11.2	21	70
	CFA, Mavelikkara	18.9	18.9	11.2	21	70
	CFA, Thrissur	18.9	18.9	11.2	21	70
<b>R7</b>	<b>2203-00-001-92 Enhancement of Academic Ambience</b>					
	<b>ICT (Rs. 430 L)</b>					
	Engineering Colleges (9x13)					115
	Polytechnic Colleges (45x5)					225
	Technical High Schools (39x2)					78
	College of Fine Arts (3x4)					12
	<b>Strengthening the Libraries in ECs and Polytechnics (Rs. 400 L)</b>					
	Engineering Colleges (9x8)					72
	Polytechnic Colleges (45x6)					270
	College of Fine Arts (3x6)					18
	Technical High Schools (39x1)					39
	<b>Strengthening &amp; Development of Physical Edn. (Rs. 100 L)</b>					
	Engineering Colleges (9x2.5)					23
	Polytechnic Colleges (45x1)					45
	College of Fine Arts (3x2)					6
	Technical High Schools (39x0.67)					26
<b>R10</b>	<b>2203-00-112-56 PPP Mode (Rs. 60 L)</b>					
	TPLC - BH					30
	Bosch - CET					20
	ADAM - BH					5
	Bosch - Kalamassery					5

**THIRTEENTH  
FIVE YEAR PLAN  
2017-2022**

**FIFTH YEAR'S PROGRAMME  
2021-2022**

**VOLUME – II  
(PART-2)**

**BRIEF DESCRIPTION OF PROGRAMMES**

## INTRODUCTION

This budget document describes the details of programmes included in Annual Plan 2021-22, which is the fifth and final year of the Thirteenth Five Year Plan. The Annual State Plan outlay for 2021-22 as approved by the State Planning Board is ₹27,610 crore and the Aggregate Plan outlay including Central Share of Centrally Sponsored Schemes and NCDC assistance is fixed at ₹37,042.91 crore. In addition to this, ₹25 crore is anticipated as Special Central Assistance to the Special Component Sub Plan and Tribal Sub Plan. Thus the Gross plan outlay for 2021-22 is ₹37067.91 crore. The SCSP and TSP components of the State's Annual Plan, including the plan programmes implemented through Local Self Government Institutions are ₹2708.54 crore and ₹781.36 crore respectively. The Centrally Sponsored Schemes are included under two categories, viz schemes with 100% Central Assistance and schemes with 50% Central Assistance. The provisions made for such schemes are purely tentative. The allocation of Centrally Sponsored Schemes including NCDC assistance in the Annual Plan for 2021-22 is ₹ 9432.91 crore.

The Covid-19 pandemic has created an unprecedented crisis in the economy and the impact of the pandemic is felt across all sectors of the economy. Therefore, special emphasis is given for overcoming the present crisis by attaining food security, livelihood creation, creating new employment opportunities, leveraging on the opportunities thrown up by the pandemic and providing adequate support to the vulnerable sections of the society.

Social and Community Services sector is the major thrust area and 31.20 per cent of the State Plan outlay is earmarked for this sector. The outlays (2021-22) for its sub sectors viz. Water Supply and Sanitation and Labour and Employment have been increased by 12.11 per cent and 12.64 per cent respectively over the Budget Estimates 2020-21. Enhanced allocation is also provided for Crop Husbandry, Animal Husbandry, Fisheries, Co-operation, Major and Medium Irrigation, Medium and Large Industries and Forests and Wild Life. Higher Education, Information Technology, Science and Technology, Skill Development, Tertiary Education in Labour, Medical Education, Livelihood, Social Justice and Welfare and Social Protection are the priority areas in the Annual Plan 2021-22. Focus is also given to promote Subhiksha Keralam projects by encouraging fallowland cultivation and establishing Integrated Farming System.

Adequate provision is included for accommodation, awareness and insurance schemes for ISM workers.

A lumpsum provision of ₹790 crore is earmarked in the Annual Plan 2021-22 for the following Major Infrastructure Development Projects viz, Vizhinjam International Container Transshipment Terminal (ICTT), Rail System in Kochi, Kannur Airport Development of Infrastructure facilities, Annuity Scheme on 35<sup>th</sup> National Games, Integrated Water Transport System-Kochi, Creation of Judicial Infrastructure, Solid Waste Treatment Plants, Performance based Infrastructure Development, Public University Campus Construction and Development (New Campus and Infrastructure Facilities for Malayalam University and Sree Narayana Guru Open University setting up of New Campus for Technological University), Kerala Rail Development Corporation (Joint Venture between GoI and GoK) and NH Bye passes-Kollam and Alappuzha. Besides, an amount of ₹200 crore is provided for Kochi-Palakkad Hi-Tech Industrial Corridor.

The outlay earmarked in the Annual Plan 2021-22, for the post-flood projects implemented under Rebuild Kerala Initiative (RKI) is ₹1830 crore. Kerala Government is implementing four innovative missions under Nava Keralam Karma Padhathi (NKKP) to touch the lives and livelihoods of the common man. LIFE (Livelihood Inclusion and Financial Empowerment) aims to transform Kerala into a State with house for all, for which ₹1152 crore is earmarked. Adequate provisions are included in Annual Plan for providing quality services at all healthcare levels for the Patient Friendly Hospital Initiative named ARDRAM. In Annual Plan 2021-22, adequate amounts are included under Haritha Keralam for developing mechanism for waste management, water resources management and organic farming in order to regain the past glory of Kerala in cleanliness, water availability and safe-to-eat agricultural products. Education Rejuvenation Mission focuses on the modernization of education, with smart classrooms, digital libraries, IT enabled learning and contemporary syllabuses for which sufficient provision is earmarked.

In addition to the outlay approved by the State Planning Board, an amount of ₹277 crore is included in the Budget Estimates for 2021-22 as part of the State's Annual Plan to provide Development and Expansion funds to LSGIs at the level recommended by the Sixth State Finance Commission. Consequent to this, the Development and Expansion fund of LSGIs for 2021-22 will be ₹7280 crore and the State's Annual Plan for 2021-22 will be **₹27887 crore**.

The Gross Plan Outlay for 2021-22 including Special Central Assistance for SCSP/TSP will be ₹37344.91 crore.

Administrative Departments in the Secretariat are required to seek necessary approvals for the implementation of Central Schemes from the respective Central Ministries. Expenditure on Centrally Sponsored Schemes has to be regulated in tune with the Central Assistance actually receivable for 2021-22. On passing of the Budget by the Legislature, Administrative Departments concerned shall issue Administrative Sanction for the implementation of the schemes, by following the existing procedural formalities.

The detailed statements of the programmes for 2021-22 are included in Volume-I, the brief description in Malayalam is given as Part-1 of Volume II and brief description in English is given as Part-2 of Volume-II.

amenities, new galleries, Fire and safety systems and other developmental and infrastructural activities at KSSTM, Thiruvananthapuram

6. Other ongoing works

An amount of ₹1900.00lakh is provided for the scheme during 2021-22.

**9. Institute of Human Resources Development (IHRD)**

**(Outlay: ₹2000.00 lakh)**

IHRD established during 1987 as an autonomous body fully owned and controlled by State Government. There are 9 engineering colleges, 8 model polytechnics, 44 colleges of applied sciences, 15 technical higher secondary schools, 2 regional centers, 6 extension centres and 2 model finishing schools under IHRD. The major developmental activities during the year 2021-22 are:

1. Construction of building (including hostels) on a priority basis & maintenance works including the share of NABARD construction works

2. Purchase of machinery, equipments, library books & furniture for the educational institutions of IHRD.

An amount of ₹2000.00 lakh is provided for the year 2021-22.

**10. Trivandrum Engineering Science and Technology (TrEST) Research Park**

**(Outlay: ₹227.00 lakh)**

Trivandrum Engineering Science and Technology (TREST) Research Park is established to enhance Industry- Institute interaction and to promote fundamental and applied research. The Research Park incorporates and encourages interactions between companies, mentors, investors, service providers, government entities and large corporations, as well as CET's talent pool to inspire and create innovation. Fund provided in 2021-22 is for e-mobility Centre of Excellence programme (Electric vehicles), Electronics Research-Centre of Excellence, new project initiatives such as Research initiatives in sustainable energy, modular High-pressure Biogas generation and Bio-CNG conversion system, K-Disc forms EV consortium, design and fabrication of two RISC-V Neural chips, Electronic hardware, design, fabrication and testing lab, Digital communication technology incubator (DCTI), Centre of Excellence in Design and augmentation of Infrastructure etc.

An amount of ₹227.00 lakh is provided for the year 2021-22 for the functioning of the Centre.

**11. Performance Based Infrastructural Development (Infrastructure Development of Trivandrum Engineering Science and Technology (TrEST) Research Park)**

**(Outlay: ₹1.00 lakh)**

An amount of ₹1.00 lakh is provided during 2021-22 as a token provision for the implementation of the scheme under the head, 'Major Infrastructure Development Projects' and under the scheme of Performance Based Infrastructural Development. The amount is earmarked for setting up of infrastructure facilities in TrEST Park.

**Directorate of Technical Education**

There are 9 Government Engineering Colleges, 3 Govt. aided Engineering Colleges, 45 Government Polytechnic Colleges (including 7 Women's Polytechnic Colleges), 6 Govt. aided Polytechnic Colleges and 39 Technical High Schools functioning under the Directorate of Technical Education (DTE). DTE coordinates various activities of engineering colleges

(government and aided), polytechnics and technical high schools with the aim of maintaining the standards of curricular and co-curricular activities. In order to enhance the quality of technical education, various schemes and programmes are being taken up. Opportunities are being offered to teachers and students to interact with the experienced and expert academicians and also to visit the various leading educational institutions all over the world. Provision has also been made for waste disposal and greening the campus.

## **12. Strengthening of the Department**

**(Outlay: ₹200.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes of previous years related to strengthening of the department.

- a) Directorate of Technical Education, RDTE Offices & Examination Wing (JCTE Office)
- b) Capacity Building of Staff of DTE/RDTEs/JCTE Office/State Board of Technical Education
- c) Human Resources Development (SITTTR, Kalamassery)

An amount of ₹200.00 lakh is provided for the above components during 2021-22.

### **a) Directorate of Technical Education, RDTE Offices & Examination Wing (JCTE Office)**

This component is for the development of the Directorate of Technical Education, Thiruvananthapuram, and the offices of the Regional Joint Director of Technical Education at Kozhikode, Kothamangalam and Office of the Joint Controller of Technical Examinations at Kaimanam, Thiruvananthapuram.

The scheme is for the overall development of the department and for the effective implementation of the Digital Document Filing System (DDFS) and other E- Governance & e-training activities viz, (1) Office modernization including restructuring, furnishing, office equipment etc.(2) Upgrading of network & procurement of computer for the implementation of e-governance and e - training in the DTE's office in the Directorate, (3) Digitization of paper records at JCTE office and (4) Software modification, Examination modernization and Accounting software. Bio-metric punching system need to be set up at all government institutions and provision for the same is also provided. Fund has also been provided for continuance of Green protocol, amenities for differently abled and non- conventional energy initiatives along with proper utilization of water resources, waste water management and energy conservation.

### **b) Capacity Building of Staff of DTE/RDTEs/JCTE Office**

In tune with the Government policy on training, this scheme envisages transforming employees in the Directorate and other institutions under its jurisdiction into fully developed, duty conscious, competent and motivated persons. The twin dimensions of the capacity building scheme are (i) overall personality development by including trainings on stress resilience, time management, emotional intelligence, understanding the public concerns and developing the attitude of service mindedness and (ii) enhancing the domain knowledge including sessions on service rules and regulations, malayalam computing, e-tender, e-governance and series of case study workshops to get deep understanding and clarity on exercising the rules and regulations. The trainings are organized at the training institutes in the State as well as at the prominent national institutes.

### **c) Human Resources Development (SITTTR, Kalamassery)**

The State Institute of Technical Teachers Training and Research (SITTTR) is functioning at Kalamassery as the academic wing of the Directorate of Technical Education. SITTTR plays a pivotal role in ensuring the academic standards of Polytechnic education in the state through curriculum development, faculty development, academic monitoring, admission to three year diploma course and providing support to all other project implementation in the Polytechnics. The centre also revises the curriculum of all other technical programmes under the Directorate of Technical Education other than engineering colleges periodically, on a scientific basis as per the technological advancements and latest market requirements.

The State Institute of Technical Teachers Training and Research is envisaged to undertake the following activities under the human resource development component during 2021-22.

- Conduct of the curriculum evaluations of Revision 2020 of polytechnic colleges, revision of curriculum of Govt. Commercial Institutes and Govt. Institutes of Fashion Designing, implementation of revised curriculum of Technical High Schools, other Kerala Government Certificate Examination (KGCE) and Kerala Government Technical Examination (KGTE) in the state.
- Conduct of state level workshops, meetings and quality improvement training programme for the faculty and technical staff of polytechnic colleges, Government Commercial Institutes, Government Institute of Fashion Design and Technical high schools, to promote awareness about trends in technology and technical education.
- Academic Inspection of Polytechnic Colleges, Govt. Commercial Institutes, Govt. Institutes of Fashion Designing and Technical High Schools in the state.
- Development of learning resource materials, printing and publication of materials for effective teaching learning process.
- Conduct admission for the Polytechnic Colleges, Technical High Schools, Government Institutes of Fashion Design and Government Commercial Institutes in an online web-based manner including Diploma programme (Evening).
- Conduct of National/state level seminars/conference in the areas of Technical Education/Emerging areas of Science and Technology.
- Conduct Open house, student project/seminar competitions and awarding certificates and prizes
- Infrastructure development including procurement and minor works
- Establishment of State board of Technical Education (SBTE) by providing separate office space.

### **13. Teaching- Learning Enhancement & Skill Gap Reduction**

**(Outlay: ₹1300.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes related to teaching learning enhancement and aimed to reduce the skill gap, a major concern in the technical education scenario. An amount of ₹1300.00 lakh is provided for the following components. Out of this amount, nearly 50% is expected to be benefitted to the girls/women.

- a. Faculty Development in Engineering and Polytechnic Colleges

- b. Industry Institute Interaction Cell (IIIC)
- c. Academic Staff College & State QA Centre
- d. Placement and Training
- e. Faculty and Staff Development Training Centre
- f. Additional Skill Development Programme (ASDP)
- g. Scholar Support Programme
- h. Punarjjani
- i. Technology Business Incubation Centres in Polytechnics and Engineering Colleges
- j. Student Affairs and Counseling Centre (SAAC)

#### **a. Faculty Development in Engineering and Polytechnic Colleges**

The outlay proposed is mainly to take care of the faculty development in engineering colleges and polytechnic colleges through full time and part time M. Tech and PhD programmes. Expenditure in connection with the sponsoring of teaching staff of Engineering colleges and Polytechnic Colleges for higher studies, supporting staff to attend conferences, conducting seminars and short term courses in the engineering colleges and Polytechnic colleges, etc. are envisaged in the scheme.

#### **b. Industry Institute Interaction Cell (IIIC)**

The Industry Institute Interaction Cell is intended to facilitate the professional development of the students of Govt. Engineering colleges, Polytechnic colleges, Fine Arts Colleges and other Institutions under the Directorate of Technical education tuned to the specific requirements of the institutions.

The specific requirements of the institutions are enlisted as below.

- Training to students and faculty members on the latest technology and industrial know-how by utilizing the services of eminent faculty from nationally reputed institutions and professionals from industries,
- Mentoring of research and academic activities in institutions utilizing the services of professionals/ senior academicians through the adjunct faculty scheme
- Extending support to the institutions for organizing programmes and certified training programmes in newly emerging areas
- Encouraging the Engineering Colleges, Polytechnic Colleges and Fine Arts Colleges to sign Memorandum of Understanding (MoU) with well- established Government and private sector undertakings for availing exposure on the latest industry practices and standards.
- Pre-employment training for students of Engineering Colleges and polytechnic colleges as well as activities of the Career Guidance and Placement Cells in the institutions
- Conduct of induction programmes for the first year students of all institutions.

Under IIIC, it is also envisaged the establishment of Human Resource Development (HRD) Cell in institutions to groom the students into confident professionals who can understand and provide solutions to the needs of society by developing their creative talents

and giving specific care to their mental/emotional well-being. Providing financial assistance to needy students going for internships is also part of the scheme.

### **c. Academic Staff College & State Quality Assurance Centre**

Academic Staff College (ASC) is expected to keep pace with the constant flow of information and knowledge, to update the knowledge base and outlook of the teachers at regular intervals and to stimulate the academic environment for promotion of teaching and research in higher education institutions. Mainly two types of activities are envisaged through ASCs-orientation programmes and refresher courses. It shall have full-fledged facilities to conduct two residential training programs simultaneously and for national/international seminars and workshops. The facilities proposed include an e-library and reference centre.

It is also proposed to construct an academic staff college. The academic staff college is required to organize trainings in synchronization with the State Quality Assurance Cell, with the objective of quality enhancement of the institutions.

### **State Quality assurance Cell (SQAC)**

The Primary aim of the State Quality Assurance Cell (SQAC) is to develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of institutions. The SQAC has to ensure that whatever is done in the institutions for “education” is done efficiently and effectively with high standards. In order to do this, the SQAC will have to first establish procedures and modalities to collect data and information on various aspects of institutional functioning.

### **d. Placement and Training**

The scheme is meant for imparting apprenticeship training to graduates and diploma holders every year through various industries and organizations and for giving stipends for diploma holders and graduates working as apprentice trainees in the department. Government has accorded sanction for training to 300 candidates (210 diploma holders and 90 graduates) under Directorate of technical Education. The main objectives of this scheme are to organise centralised walk-in-interviews at various centres in Kerala to select apprenticeship trainees and to conduct awareness and training programmes for the staff and students of polytechnic colleges for improving the effective placement activities. Supervisory Development Centre (SDC), Kalamassery is responsible for the implementation of apprenticeship training programmes, as envisaged in the Apprentices (amendment) Act 1973 & 1986, for engineering graduates and diploma holders in the state. All central/state/private organizations and Government departments in the state select apprentice trainees through SD Centre. Apart from apprentice training, some small and medium private organizations approach this office for the recruitment of their permanent employees.

### **e. Additional Skill Development Programme (ASDP)**

The main objective of this scheme is to conduct various skill training programmes for youth from marginalised segments of the society at Government Engineering colleges. It was proposed to establish Skill Development Training Centres in all Government Engineering Colleges by starting at least one Skill training programme in each institution suitable for the

society. This training programme is intended for the empowerment of unemployed and financially backward youth of all communities, with focus on marginalized segments. The trainees are paid with monthly stipend, tool kit and awarded with certificate of competency after successful completion. The expenditure included honorarium to faculty, cost of materials, stipend to the participants etc for each programme.

#### **f. Scholar Support Programme**

The main objective of this programme is to conduct remedial classes for needy students belonging to all categories at institutions under Directorate of Technical Education to improve academic level. To cater the requirement of the large number of students who are academically weak in engineering colleges and polytechnics, remedial classes are being conducted for various subjects. This would ensure better pass percentage. The scheme is to be implemented through all government engineering colleges, polytechnics and technical high schools. Amount is also provided for remuneration to faculty in engaging coaching, expenses for light refreshment to the students, expenses for providing learning materials to the students etc.

#### **g. Punarjjani**

Punarjjani, as the term denotes, a unique programme designed by National Service Scheme- Technical cell, Kerala to rejuvenate the discarded and unusable instruments, tools and other materials. The project aims at restoring and reinstating the assets of institutions such as Government hospitals, engineering colleges, polytechnics and similar government institutions. The plumbing, sanitation and waste management, electrical repairing etc. are also targeted under the scheme.

#### **h. Technology Business Incubation Centres in Polytechnics and Engineering Colleges**

This scheme is to promote entrepreneurial attempts by the students in campuses by establishing Technology Business Incubator in various Engineering colleges and Polytechnic colleges in the State. The main objectives proposed are promoting innovation among budding engineers, commercialise the ongoing research, spot and nurture entrepreneurial talents from among the students, conduct entrepreneurship development programmes for students and faculty, professionals employed in the industry and individuals through TBIs. Amount is provided for expanding TBICs in all potential institutes, creation of infrastructural facilities, creation of additional cubicles, training and awareness programmes, biometric access control and security cameras, additional furniture and computers etc.

#### **i. Student Affairs and Counseling Centre (SACC)**

In the present world which is increasingly volatile, uncertain, complex and ambiguous, student support systems are essential for the taking care of mental/emotional wellbeing of students. Mechanisms are also required to develop the creative talents of students and mentor them to become confident, well balanced individuals able to contribute to the needs of the society. Establishing SACC in all engineering colleges, polytechnic colleges, CFA and technical high schools is aimed to address these issues.

## **14. Development of all Government Engineering Colleges**

**(Outlay: ₹3530.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes related to development of all Government Engineering Colleges in the state, including infrastructure development and overall quality improvement. An amount of ₹3530.00 lakh is provided for the following components:

- a. Development of Engineering Colleges
- b. Education Resource Centres in all Engineering Colleges
- c. Research Scholarship in all Engineering Colleges
- d. Quality Improvement Centres in Engineering Colleges
- e. Accreditation of Engineering Colleges
- f. Technical Education Quality Improvement Programme (TEQIP phase II)

### **a. Development of Engineering Colleges**

Earlier the plan schemes for development of engineering colleges (revenue) were under different heads. Last year all the institutions were brought under single umbrella. The major components of the scheme include various civil construction works such as promotion and aiding research facilities, providing digital/E-library facilities, converting engineering colleges in to Centre of Excellence, setting up of bio-matric punching system, continuance of Green protocol and non-conventional energy initiatives, proper utilisation of water resources, waste water management and energy conservation, amenities for differently abled personnels, award research scholarships, promote new and innovative methods in engineering education, provide guidelines and consultation for educational programme, infrastructure development of all engineering colleges, laboratory facilities, student amenities, hostel and library facilities.

### **b. Education Resource Centres in all Engineering Colleges**

As a part of the Information and Communication Technology initiatives, all the classrooms in the government engineering colleges were converted into smart classrooms by providing LCD projectors, lap top computers and internet connectivity. The faculty and students can now easily access Learning Management System (LMS) and to make maximum utility of the educational content generated by the academics around the globe. The institutional repositories and e-learning systems are identified as essential infrastructure for any organization in the Digital Age. Amount is provided during 2021-22 to continue the activities in all Engineering Colleges, in this regard. The items proposed in 2021-22 include establishment of fully featured digital media studio, electrification, e-journal, Public addressing system, networking, providing server and LAN to host e-resources related to career guidance and soft skill training and procurement of engineering content learning software.

### **c. Research Scholarship in all Engineering Colleges**

It is proposed to continue to award research scholarships to selected students in engineering colleges for their excellence in research work to improve in-house research activities. The research scholarship is awarded to Ph.D students and to M.Tech students to enhance the research ambience. Selection of the students for the award of scholarship will be decided by a committee decided by the Directorate of Technical Education. It is also proposed to award scholarship to M.Tech students who do not have GATE scholarship, from

among the eligible M.Tech students and the selection of the candidates will be done by the committee for the purpose.

**d. Quality Improvement Centres in Engineering Colleges**

Quality Improvement Centres are functioning in College of Engineering Thiruvananthapuram, Govt. Engineering College, Thrissur and in RIT Kottayam, in which faculty in Engineering Colleges have the opportunity to undergo Ph.D programmes. The other six engineering colleges are identified as research centres by KTU and it is proposed to extend the scheme to all Govt. Engineering Colleges in the State. The existing laboratories, workshops, library facilities etc. are to be enhanced. Residential facilities for the QIP research Scholars are also to be constructed.

**e. Accreditation of Engineering Colleges**

Our colleges are with good atmosphere for education. If these colleges are given opportunity to get accredited, the students and faculty will acquire self-esteem as well as employability and Higher Education chances. International visibility and National level recognition also are linked to accreditation. Industries conducting campus interviews are always emphasising the quality of our engineering students. Accreditation makes more confidence and self-esteem in faculty and students. It will also make more employability. Moreover the Technical Education provided from these institutions will be of value, competent to National and International standards. In addition to the above AICTE has mandated that new programmes will be sanctioned only to the institutions having accreditation. Amount is provided for improving facilities in colleges and other preparatory works for getting accreditation of NBA.

**f. Technical Education Quality Improvement Programme (TEQIP phase II)**

Technical Education Quality Improvement Programme (TEQIP) is a project of Govt. of India to improve academic standard and infrastructure facilities of engineering colleges. In the first phase of TEQIP five engineering colleges were selected and project had been implemented in the period 2003-2009. In TEQIP phase- II, 19 engineering colleges are selected. Under TEQIP- III, 250 institutes will be competitively selected based on the pre notified criteria (based on the quality of the proposal submitted by the institutes). The scheme is envisaged as a 100% Centrally Sponsored Scheme. State Project Facilitation Unit (SPFU) is the designated agency to monitor and control the utilisation of the funds. The amount provided in 2021-22 is for functioning of SPFU for monitoring the scheme.

**15. Development of All Government Polytechnic Colleges**

**(Outlay: ₹4030.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes related to overall development of diploma level education in the state, including infra structural development. The major components of the scheme are a) Development of all Government Polytechnic Colleges b) Establishment of Production And Training (PAT) Centre in Polytechnic Colleges c) Accreditation of Govt. Polytechnic Colleges and d) Material Testing and Certification centre in Polytechnic Colleges.

An amount of ₹4030.00 lakh is provided for these components during 2021-22.

### **a. Development of all Government Polytechnic Colleges**

There are 45 government polytechnics in the State, 38 General Polytechnics and 7 Women's Polytechnics. In the approach paper to the 13th five year plan it has been recommended to adopt NSQF. The department proposes to implement this system in all polytechnic colleges, at least in one specialization in each polytechnic. The polytechnic education is poised for a drastic change in academic and infrastructural development by modernizing the laboratories, libraries and class rooms. Community polytechnic scheme is being implemented in 31 polytechnics through which the polytechnics reach the needs of the community around them. The community college scheme approved by MHRD as per NSQF norms are also functioning in 5 polytechnic colleges in the state. But still some of the polytechnics established years back needs strengthening, rewiring, special repair and maintenance. Most of the existing institutions require construction of additional buildings for administrative blocks, auditorium, academic blocks, workshops, library buildings, new classrooms, sports complexes and laboratories, compound walls, procurement of machinery and equipment and furniture, electrification and so on. Workshops and labs of all polytechnic colleges are in need of modern machinery and equipments, especially for conventional branches like Civil Engineering, Mechanical Engineering etc., in which heavy machinery and equipments are required.

Providing general improvement in infrastructural facilities of the colleges, class rooms, sufficient hostel accommodation, procurement of laboratory items, setting up of sewage treatment plant, facilities like digital/e-libraries, drinking water requirements, setting up of Bio-metric punching system at all government institutions, amenities for differently abled personnel, continuance of Green protocol and non-conventional energy initiatives, along with proper utilization of water resources, waste water management and energy conservation are envisaged under the scheme.

### **b. Establishment of Production and Training (PAT) Centre in Polytechnic Colleges**

Practical training and Industrial exposure are two essential components of Technical education. Due to limited laboratory facilities and absence of major manufacturing industries in the vicinity of colleges, students fail to acquire sufficient exposure. To overcome this challenge the establishment of a Production and Training Centre associated with the institution is envisaged. Necessary Training in the allied areas like advanced technology, Quality control, management, sales & marketing etc. are also to be incorporated during the course. During 2021-22, it is aimed to extend PAT centres to more polytechnic colleges.

### **c. Accreditation of Govt. Polytechnic Colleges**

There are 45 Polytechnic Colleges in the Govt. sector and 6 Polytechnic Colleges in the Aided sector functioning in Kerala. Accreditation makes more confidence and self-esteem in faculty and students. It will also make more employability. Moreover the Technical Education provided from these institutions will be of value, competent to National and International standards. In addition to the above AICTE has mandated that new programmes will be sanctioned only to the institutions having accreditation.

All the institutions are expected to complete the process of accreditation for all courses offered by 2022 and the amount provided is for augmentation of infrastructure, laboratory facilities student amenities, hostel and library facilities, development of class rooms, hostels etc.

#### **d. Material Testing and Certification centre in Polytechnic Colleges**

This scheme is for establishing Material Testing and Certification Centres in Government Polytechnic colleges where the civil engineering branch is existing. The materials used for building construction are to be tested and certified by authorized certification centers before they are used in construction. The curriculum of civil engineering branch in polytechnic involves practical classes for testing of materials like bricks, steel bars, cement, concrete tube etc. In the State, testing centres have been established in 5 nodal polytechnics in Kozhikkode, Palakkad, Thrissur, Kalamassery and Thiruvananthapuram. The Centres helps the students to study the actual process of testing during their course of study and revenue will be generated in the institution by the way of testing fees. The outlay provided is for registration, administrative and maintenance expenses along with procurement of additional machinery for the five centres.

#### **16. Development of Government Technical High Schools**

**(Outlay: ₹1200.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes related to overall development of technical high school education in the state, including infra structural development. An amount of is provided ₹1200.00 lakh for implementing two components in the Scheme viz., a) Infrastructural Development of Technical High Schools and b) National Skill Qualification Frame work in Technical High Schools and Polytechnics (NSQF)

##### **a) Infrastructural Development of Technical High Schools**

There are 39 technical high schools functioning under the Directorate of Technical Education. Some of the Technical High Schools are not having own land and are functioning in rented building. Amount is provided for civil works such as construction of class rooms, hygienic toilets, workshops, laboratories, libraries, construction of play ground, compound wall, amenities for differently abled personnel and biometric punching system. Land acquisition for the five Technical High Schools (Kurichi, Kavalam, Elanji, Kadaplamattam, Ayvana) is also envisaged under the programme

In tune with Education Rejuvenation Mission, a Government of Kerala initiative, and Atal Innovation Mission (AIM), a program formulated by Niti Ayog, the Directorate of technical education proposes to implement Robotics Clubs at Technical High Schools in the State. Provision is also made for continuance of Green protocol and non-conventional energy initiatives, along with proper utilization of water resources, waste water management and energy conservation.

##### **b) National Skill Qualification Frame work in Technical High Schools and Polytechnics (NSQF)**

The All India Council for Technical Education (AICTE), Ministry of Human Resource Development (MHRD) has launched the National Vocational Education Qualification Framework (NVEQF) to be implemented in Polytechnics, Engineering Colleges and other colleges in the University systems from 2012-13. It is proposed to implement the scheme, in Technical High Schools and in some selected Polytechnics. Sectors and specialization under NVEQF identified for the Technical High Schools and Polytechnics include Automobile, Manufacturing, Construction, Power etc.

The amount provided is for resource preparation, arranging faculty development programmes, purchase of machinery and equipment, books, workshops, academic monitoring, seminars/industrial visits in Technical High Schools, Government Institute of Fashion designing (GIFD) and Polytechnic colleges.

### **17. Development of Fine Arts Colleges**

**(Outlay: ₹310.00 lakh)**

The scheme is for the development of three Fine Arts Colleges at Thiruvananthapuram, Mavelikkara and Thrissur. The provision is for the state of the art facilities such as class rooms, art galleries, improvement of studio, student amenity centre, digitization of library and audio visual facilities, student amenities, hostel facilities to students, purchase of equipment required for the three Fine Arts colleges, renovation works etc. The provision is also given for conducting national level art camps /art exhibitions/ workshops and national/international seminars for students and faculty of CFA's, both campus-centered and outside Kerala. Provision to meet the expenses related to life models (life study) is also given. Study tour grants for BFA/MFA students of ₹5000 per head subject to the effective utilization, guaranteed by the principal are proposed. As a part of motivating budding artists, a 'promising art student' award is proposed for two UG level students per department per institution on merit cum means mode, with annual financial assistance of ₹10,000/-.

During 2021-22, Bio-metric punching system need to be set up at all government institutions and provision for the same is proposed. Provision is also made for continuance of Green protocol and non conventional energy initiatives, along with proper utilization of water resources, waste water management and energy conservation. Special amenities for differentially abled students are also envisaged.

An amount of ₹310.00 lakh is provided for implementing the scheme for 2021-22.

### **18. Enhancement of Academic Ambience**

**(Outlay: ₹1000.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes related to overall enhancement of academic ambience for technical education in the state, including infra structural development. The major components of the scheme are: a) Evolving Libraries as Knowledge Centres (Strengthening the Libraries in Engineering Colleges and Polytechnics) b) Strengthening and Development of Physical Education c) ICT in Engineering Colleges and Polytechnics and d) Connectivity for National Mission on Education through Information Communication Technologies (NMEICT).

An amount of ₹1000.00 lakh is provided for implementing the following components during 2021-22.

#### **a) Evolving Libraries as Knowledge Centres**

The scheme aims to automatize and digitizes the libraries in all engineering colleges, polytechnics, Fine Arts Colleges and technical high schools. The scheme will make a drastic change in the library management system and will revolutionize the library system to an international standard. The objective of this programme is to extend reading room facilities to students and faculty in libraries during extended hours and holidays through library interneers. The amount provided is for following programme

1. Digitalization of library books in all the institutions.
2. Making available online journals in all areas

**b) Strengthening and Development of Physical Education**

This component is for encouraging and strengthening of physical education in engineering colleges, polytechnics, technical high schools and Fine Arts Colleges. Most of these institutions are located in remote areas and as such do not offer easy access to facilities for sports and games or physical fitness centres. The amount earmarked is for providing adequate facilities to physical education for the institutions under DTE to develop into self sufficient campus units with facilities for games/fitness.

**c) ICT in the educational institutions under DTE**

ICT has the potential to contribute greatly to the practice of engineering education. Most of the class rooms in Government Engineering Colleges and Polytechnics have been already converted in to smart class rooms. Amount earmarked is for providing digital class rooms, digital faculty rooms, e-learning resources, digital library, campus wide networking and online course management system for the development of all the technical institutions in the State including technical high schools and Fine Arts Colleges.

**d) Providing Connectivity for National Mission on Education through Information Communication Technologies NMEICT**

The Scheme was launched as a Centrally Sponsored Scheme for providing connectivity to institutions named as National Mission on Education through Information Communication Technologies (NMEICT). It is intended to establish a strong communication network between institutions of higher learning which is imperative for the spread of the best practices and the best knowledge modules, encouraging shared learning from the experts in the country. Presently the connectivity to polytechnics and Engineering Colleges provided are changed to OFC backbone. This necessitates additional allocation for the connectivity charges.

**19. Research Initiatives**

**(Outlay: ₹350.00 lakh)**

The Scheme is formulated as a combination of the continuing plan schemes related to overall development of research activities under technical education in the state, including infrastructural development. The various components grouped together are a) Transportation Engineering and Research Centre b) Product Design & Development Centre in CET c) Re-Usable building system in RIT, Kottayam d) Rural Technology Development Centre e) Student Satellite Launch Programme at CET f) Centre for Bamboo Technology, at GEC TVM g) Interdisciplinary Research Centres at Govt. Engineering Colleges h) Robotics & AI nodal Centre i) Centre of Excellence in Systems, Energy & Environment and j) Centre for high performance computing at CET.

An amount of ₹350.00 lakh is provided for implementing these components for 2021-22.

**a) Transportation Engineering and Research Centre (TRC)**

The Transportation Engineering Research Centre was set up in College of Engineering, Thiruvananthapuram. The TRC research programme emphasize applied research and technology transfer to enhance knowledge in the field of transportation and to solve transportation problems encountered by transportation community and also provides an extensive array of labs, equipments and reference materials. The specific objectives are (1)

conduct research relating to highway materials (2) develop good maintenance and construction practices, (3) evaluate the performance of pavements (4) develop accident prediction models (5) develop a data base to support the development of codes, guidelines, standards and manual for sustainable infrastructure development(6) suggest traffic management measures and practices (7) promotion of regional level consultancies (8) to equip the faculty by giving training in India and abroad to keep abreast with the latest developments in the relevant fields (9) conduct training programme and short term courses for the practicing engineers and academicians to transfer the research outputs for implementation (10) to offer research fellowship.

**b) Product Design & Development Centre in CET**

Product design and Development at Centre at College of Engineering Trivandrum was setup as a pilot project which could be replicated in other engineering colleges. The proposed centre would develop and test new designs for products and shall transfer the technology to prospective entrepreneurs. The centre shall also impart training on product design to students and unemployed youth through specialized programs. The amount provided is for implementing the above activities.

**c) Re-Usable building system in RIT, Kottayam**

The re-usable building system is to ensure sustainability of expanding urban infrastructure. This is aimed to incorporate innovative materials/structural components to accelerate the turn over time of mass housing schemes. Such interventions would culminate in the evolution of a material use policy for the construction activities in the State to ensure sustainable resource use and environmental protection. This programme is actively participating in the Life Mission programme of the State Government. Amount provided is for research activities in this field.

**d) Rural Technology Development Centre**

The Rural Technology Development Centre (RDTC) is envisaged to act as a link between academia and local communities, for the transfer of appropriate technology specifically developed for the betterment of the rural technologies. The Rural Technology Development Centre is aimed to develop innovative solutions to develop efficient and effective mechanisms to uplift traditional technologies. The Centre acts as a nodal Centre for the transfer of technological knowhow connecting the other technical institutions in the state including engineering colleges and polytechnic colleges with the community. The centre can work in three dimensional framework, i) improvisation of machinery involved in rural technologies ii) development of new products using traditional technologies and iii) solution to technical and maintenance problems. The amount is provided for purchase of equipment and other expenses for the functioning of the centre.

**e) Student Satellite Launch Programme at CET**

It is proposed to launch a student satellite by College of Engineering Trivandrum in collaboration with Indian Space Research Organization (ISRO). This is a long term project which can be materialized in 3-4 years. The project team will include all the Departments of CET which will include undergraduate students, post graduate students and faculty members with an approximate team size of 100. The project will be coordinated by the newly established CET Centre for Interdisciplinary Research (CCIDR) of the College.

#### **f) Centre for Bamboo Technology**

Centre for Bamboo Technology has been established at Government Engineering College, Barton Hill. The objectives of the scheme are to conduct R & D on bamboo as a construction material, R & D on value addition to bamboo as a commercial product, use bamboo as bio fuel, network with institutions doing research in bamboo technology, to propagate the use of bamboo as a sustainable source and to conduct annual conference on bamboo technology.

#### **g) Interdisciplinary Research Centres at Govt. Engineering Colleges**

The Directorate of Technical Education proposes to establish interdisciplinary research centres in the Govt. Engineering Colleges. The centres are envisaged to act as platforms to facilitate and promote interdisciplinary research among the faculty members, so as to emerge with quality research outputs useful for the society. The Centre will encourage the faculty members to undertake multidisciplinary projects at the UG/PG level and create an environment where doctoral studies are carried out under the supervision of faculty members from different disciplines. It is proposed to establish interdisciplinary research centres in 9 government Engineering Colleges, in specified are identified by the host institution.

#### **h) Robotics & AI nodal Centre**

As part of setting up of Inter-disciplinary research centres at various engineering colleges in the state, the Robotics and Artificial Intelligence Centre was set up at GEC, Thrissur. The idea was to establish a facility to be shared by various engineering colleges, polytechnics and technical high schools under Department of Technical Education, Kerala and function as a centre of excellence in Robotics & AI. The centre aims to conduct advance research pertaining to the fields of Robotics, Automation, and Human-Computer Interaction through concerted efforts across various disciplines of Engineering & Science, through proactive research and development activities, viable consultancy projects, and realizable student projects at UG and PG level.

#### **i) Centre of Excellence in Systems, Energy & Environment**

The centre of excellence, set up at GCE, Kannur, aims at providing technical, techno-economic and environmentally compatible solutions to the following societal problems which requires urgent attention of the engineering fraternity in Kerala, i.e., 1) waste management, 2) energy shortage and 3) other related environmental issues. This will be achieved by organizing, research, demonstration, training, public interaction, consultancy and other academic activities in an interdisciplinary domain of systems, energy and Environment. Research in renewable energy, waste management systems, environmental science and system analysis as well as conducting energy audit are the major thrust areas of the proposed CESEE.

#### **j) Centre for high performance computing at CET**

Artificial Intelligence is an emerging area in which lot of research potential and job opportunities exist. High Performing Computing is an essential tool for computational schemes such as Machine Learning, Deep Learning, Data Analytics and so on. PhD/UG/PG students get exposure to state of the art technology and can take up quality projects/thesis which require high computational requirement. The centre is proposed to be set up at CET and envisages students to bring up innovative solutions in the field of health care,

Agriculture, Robotics and Artificial Intelligence, Automation, self-driving cars, surveillance monitoring, always listening IoT devices etc, by developing their own algorithms and train their model on huge data sets, with help of the proposed computing facility. For procurement of hardware and installation, for the year 2021-22, budget provision is set apart.

## **20. Schemes Under PPP Mode**

**(Outlay: ₹60.00 lakh)**

The following four schemes will be implemented in PPP mode. They are joint programmes with special emphasis given for the national and international players. These programmes started during the previous years are proposed for continuing during 2021-22. For these four programmes amount will be provided in a single head from which the same can be utilized.

An amount of ₹60.00 lakh is provided for these schemes in 2021-22.

### **a) Advanced Diploma in Automotive Mechatronics (ADAM) and Centre of Excellence in Mechatronics at GEC, Barton Hill**

Government of India has accorded sanction for starting one year Advanced Diploma in Automotive Mechatronics (ADAM) in Govt. Engineering college, Barton Hill in collaboration with Mercedes Benz Pvt. Limited, Pune. MoU has been signed between Government Engineering College Barton Hill and M/s Mercedes Benz India Pvt.Limited, Pune. Wheel alignment module and auto electrical module are added to the existing facility in collaboration with M/S. Bosch Auto Electricals.

The aim is to convert Centre for ADAM into a Centre of Excellence in Mechatronics. Presently the Centre is focused on Automotive Mechatronics. A comprehensive automotive testing facility is planned to be set up in collaboration with M/S. Bosch India. Also plans to provide expert training in the field of Industrial Robotics. The trained manpower will help the industry to adopt latest technologies to improve quality and work condition with high productivity.

### **b) Centre of Excellence in Automation Technologies in College of Engineering Trivandrum**

It has been decided to establish a Centre of Excellence in the field of Automation Technologies, in association with M/s Bosch Rexroth, in College of Engineering Trivandrum. The concept is to establish master centre at State level-centre of excellence and regional centres in the regional district-centres of competency, in association with M/s Bosch Rexroth a German company for which an MoU has already been signed. It is also proposed to start a PG programme in automation technology and conduct research programme. Training will be given to the faculty and students of nearby engineering and polytechnic colleges in the region. Joint certification will be provided and thus the employability of students will be ensured. Fund is earmarked for the training, up gradation of laboratories of the centre, infrastructural development and other on-going works.

### **c) Centre of Competence in Automation Technologies in Govt. Polytechnic College, Kalamassery**

The Govt. Polytechnic College, Kalamassery is situated at the industrial centre of Ernakulam district. In the year 2013-14 it has been decided to establish a Centre of

Competence in the field of Automative Mechatronics, in association with M/s Bosch Rexroth, in Govt. Polytechnic College, Kalamassery. 12 faculty members in Mechanical Engineering had attended the trainers training programme organised by M/s Bosch Rexroth at their training centre in Visweswaraya Technological University, Mysore.

The Centre of Competence in Govt. Polytechnic College, Kalamassey will be one of the third centre of its kind in India, supported by M/s Bosch Rexroth, which will arrange machinery and equipment for the setting up of the state of the art laboratory on Hydraulics, Pneumatics, Sesorics, PLCs, and Mechatronic. The joint efforts of Government Polytechnic College Kalamassery and Bosch Rexroth in establishing the training centre will foster an excellent industry-academic partnership and make a notable contribution to enable India to gear up for the global challenges in manufacturing sector. Fund is provided for stationary, preparation of learning materials, providing food and refreshment, maintenance and installation of lab kits, infrastructural development, course materials for participants etc.

#### **d) Translational Research & Professional Leadership Centre, TPLC, Barton Hill, Thiruvananthapuram**

The Department of Higher Education had given sanction to start a one year diploma course in Translational Science and Engineering and later sanction was granted to change it to an M.Tech programme in Translational Engineering. This programme is being conducted in collaboration with the Columbia University and the University of Montreal, Canada and Institutes of Excellence like IITM Chennai. Under this scheme, fund is provided for the implementation of seven components- (1) TPLC-M.Tech in Translational Engineering (2) TPLC- Student/professional focus (3) TPLC- Distinguished Visiting Scholar Programme (4). TPLC -Connect for socially relevant projects (5) TPLC- Incote (International conference on Translational Engineering (6) TPLC- manpower and (7) International internship programmes. Amount is provided for developing the centre into a Centre of Excellence in Translational & Professional leadership, there by paving the way to moulding socially-committed and ethical professionals for future.

#### **21. Centrally Sponsored Schemes for Polytechnics (50% CSS)**

**(Outlay: ₹202.00 lakh)**

The components of the scheme are upgradation of existing/setting up of new polytechnics (under the scheme of co-ordinated action for skill development of MHRD) and Community Development through Polytechnics.

An amount of ₹202.00 lakh is provided as state share for these components for the year 2021-22. Additional amount will be released in proportion of central assistance.

**SPECIAL SCHEME/CENTRE**

**ACTIVITY REPORT - PROFORMA**

- Name of the institution:
- Name of the scheme/centre:
- Year of Establishment of the Scheme/Centre:
- Name of Coordinator:
- Contact Mobile Phone:
- Contact Email Address:
- Major physical achievements of the centre since establishment (Bullet points only)
- Source of Fund: Plan Fund (State Govt) / Specify the details if other funding has been utilised

**FY 2020-21**

(I) Major Activities completed/physical progress attained by the centre during the FY (bullet points only)

(II) Actual Expenditure incurred during the FY (Mention State Govt Fund and External Aid separately)

(III) Manpower engaged, if applicable (Please mention Job Role, No. of persons, Nature of Appointment and Rate of Remuneration)

*\* Also please attach a maximum of 5 photographs showing the major physical achievements of each project/centre till date along with the soft copy of the activity report.*